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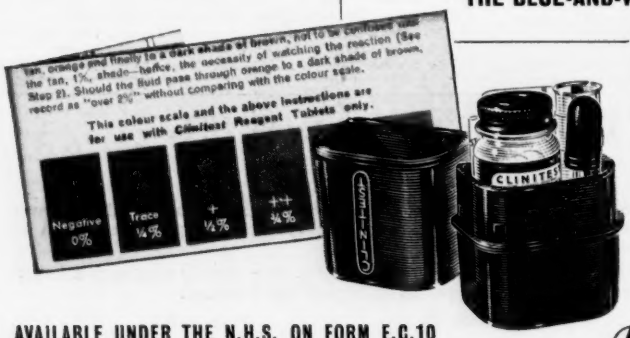
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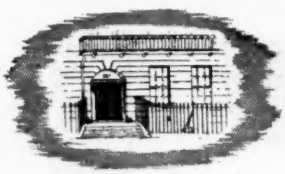

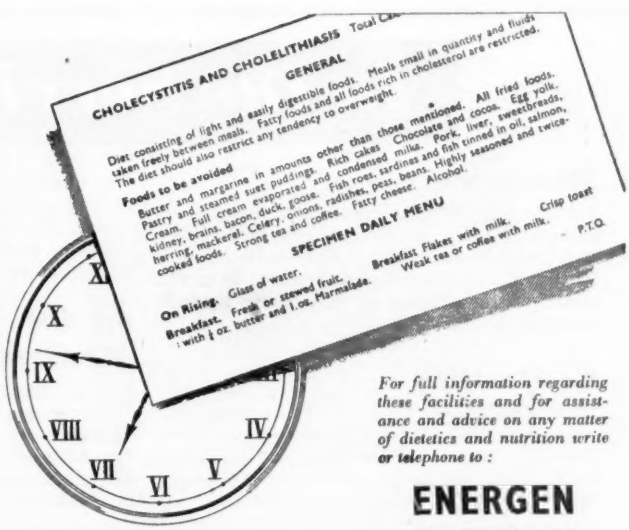
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Breakfast. Fresh or stewed fruit. Breakfast Flakes with milk. Crisp toast with ½ oz. butter and 1 oz. Marmalade. Weak tea or coffee with milk.
P.T.O.

For routine cases :—
Standard diet charts.

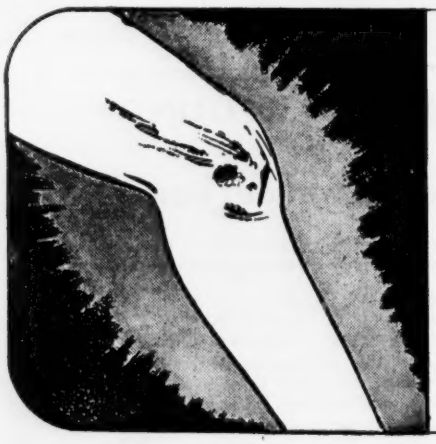
For special cases :—
Special diets constructed to suit individual needs.

For detailed guidance :—
Personal consultation with the dietitian.

For full information regarding these facilities and for assistance and advice on any matter of dietetics and nutrition write or telephone to :

ENERGEN DIETARY SERVICE

25a, BRYANSTON SQUARE, LONDON, W.1
AMBassador 9332



CUTS AND GRAZES

Delay in the healing of cuts and grazes is often due to superimposed infection and a dressing which adheres to the wound and causes disturbances of delicate healing tissues.

The OPTULLE dressing consists of a wide mesh gauze impregnated with a petroleum-jelly compound containing Balsam of Peru. After the injured area has been cleansed it should be covered with OPTULLE which is soothing and has been heat sterilised in its container.

OPTULLE is a smooth tulle gras dressing which does not adhere to raw areas. Drainage is effected through the wide mesh gauze and the dressing may be left in situ without frequent changes. When redressing is necessary OPTULLE can be removed without pain or damage to healing tissues or causation of haemorrhage through rupture of fine vessels.

OPTULLE is of especial value in treating cuts and grazes in children.

THE FULL RANGE OF OPTULLE DRESSINGS COMPRISE:

NHS PACKS

Paraffin Gauze Dressings B.P.C. Individual dressings 3½" sq. packed 12 to a carton. Tins of 5, 10 and 36 Dressings

Penicillin Tulle Dressings Tins of 10 Dressings

Sulphathiazole Tulle Dressings Individual dressings of 3½" sq. packed 12 to a carton. Tins of 5, 10 and 36 Dressings

HOSPITAL PACKS

Paraffin Gauze Dressings Tins of 24 dressings 3½" sq. Tins of continuous strip 5 yds. × 8"

Sulphona Tulle Dressings Tins of continuous strip 5 yds. × 3½"

Optulle

Brand Dressings

Further particulars on application to: CHAS. F. THACKRAY LTD 10 PARK STREET, LEEDS AND 38 WELBECK STREET, LONDON, W.1
Manufacturers: OPTREX LTD. PERIVALE · MIDDLESEX

In the Service...

Research

The House of Wander continues to maintain its advanced position in pharmaceuticals and quality food products because the standardization of active ingredients during manufacture is backed by careful control and investigation in its extensive Research Laboratories.

In Quality

The Wander Research Laboratories have made useful contributions in the fields of dietetics, nutrition and vitamins. Their wide experience and up-to-date laboratory facilities help to maintain the high quality of Malt Extract and Cod Liver Oil (Wander) the vitamin content of which exceeds that of the analogous B.P. preparations.

The special consideration of physicians when prescribing a malt and oil preparation is that of vitamin values. Comparative studies prove that to prescribe "Wander Brand" is to specify malt extract and cod liver oil of the finest possible quality.

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Careful control and investigation help to maintain "Wander Brand" in the forefront of its class. Moreover, with all its special advantages, "Wander Brand" costs no more than some malt and oil preparations with a lower vitamin content. *And since its vitamin content exceeds B.P. standards it may be prescribed without restriction for therapeutic purposes on N.H.S. scripts, thus:—*

A. WANDER LTD.
LONDON W.1.

℞ Malt & Oil (WANDER)

M.352

'MEPILIN'
for the menopausal patient

HITHERTO AVAILABLE AS TABLETS AND NOW ALSO AS A PLEASANTLY FLAVOURED ELIXIR

The association of methyltestosterone and ethinylœstradiol in Mepilin produces a more complete response in the treatment of menopausal disorders than can be obtained by the use of œstrogens alone.

The presence of methyltestosterone enables a reduction in œstrogen dosage to be made; thus undesirable side effects such as breast turgidity and pelvic congestion are avoided and the risk of withdrawal bleeding is reduced. An increased feeling of confidence and well-being is produced which is both mental and physical.

Each teaspoonful (4 ml.) of Mepilin Elixir and each Mepilin Tablet contains ethinylœstradiol 0.01 mg. and methyltestosterone 3 mg.

'MEPILIN' TABLETS Bottle of 25 at 5/2 and 100 at 16/-
'MEPILIN' ELIXIR Bottle of 4 fl. oz. at 6/8 and 20 fl. oz. at 25/6 *Basic N.H.S. Price.*

DOSAGE: Menopause and geriatric conditions: average cases—3 tablets or 3 teaspoonfuls daily. Premenstrual tension and dysmenorrhœa—2 tablets or 2 teaspoonfuls daily from 10th to 22nd day of the menstrual cycle.

Literature and specimen packings are available on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

MEP/E/5

'SULPHAMEZATHINE'

Sulphadimidine B.P. Trade Mark

in Urinary Tract Infections

'Sulphamezathine' is one of the most potent, yet least toxic, of the sulphonamides. It is well-tolerated and rarely produces unpleasant side effects. Renal complications do not occur. Excretion of 'Sulphamezathine' is relatively slow, and effective blood levels can easily be maintained. 'Sulphamezathine' is of exceptional value in the treatment of acute or chronic infections of the genito-urinary tract, caused by sulphonamide-sensitive organisms.

Available under the National Health Service at Ministry of Health Drug Tariff Prices.

ICI

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A subsidiary company of Imperial Chemical Industries Ltd. WILMSLOW, MANCHESTER

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FENOX was introduced in the Autumn of 1951: now, after two years' widespread clinical use, its efficacy as a nasal decongestant is universally accepted. For the symptomatic relief of the common cold and other catarrhal conditions, Fenox offers all these advantages:

Immediate and prolonged vasoconstriction
No undesirable side-effects
Water-miscible and non-oily
Same viscosity as mucus
Non-irritant—adjusted pH and tonicity
Suitable for both adults and children

FENOX

Isotonic Nasal Drops of Phenylephrine and Naphazoline. Supplied in ½ fl. oz. dropper-bottles. Net price to the Medical Profession in Gt. Britain 2/1½d. Retail price 2/6d.

Boots

Sample and descriptive literature from the Medical Department
BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM ENGLAND

8.171

FROM TURBULENCE TO TRANQUILLITY

'MYSOLINE'
Trade Mark

in the control of epilepsy

'Mysoline', an entirely new anticonvulsant, was introduced in 1952 following publication of the results obtained in long-standing cases of major epilepsy which had resisted treatment with other established drugs. Since that time clinical evaluation in numerous important neurological centres in Great Britain and overseas has amply confirmed the earlier trials. These investigations have all shown that 'Mysoline' possesses a number of notable features — ability to control the grand mal attack, low toxicity and freedom from hypnotic effect. In addition, a beneficial effect on general behaviour, performance and sociability has been observed.

Preliminary studies with 'Mysoline' in psychomotor epilepsy are extremely encouraging, and there is evidence that it may also be of use in petit mal.

'Mysoline' tablets (0.25 gramme) are now available in packings of 100 and 1,000.

'MYSOLINE'
Primidone Trade Mark
(5-ethyl-5-phenyl-hexahydropyrimidine-4: 6-dione)

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED
A subsidiary company of Imperial Chemical Industries Ltd. WILMSLOW, MANCHESTER
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ICI

A new and logical therapy for Rheumatic conditions

Water-soluble esters of salicylic, p-aminobenzoic and nicotinic acids, that readily pass the skin barrier

The local treatment of rheumatic conditions has hitherto presented certain difficulties; drugs which penetrated the skin often caused intense irritation and their use was of doubtful value.

Transvasin, a new preparation developed by Hamol S. A., our Swiss associates, and now available for prescription in this country, contains *esters* of salicylic, p-aminobenzoic and nicotinic acids. These esters, being both water- and fat-soluble, readily pass the skin barrier in therapeutic quantities without causing irritation, and enable an adequate concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema but also brings about a *deep* hyperaemia of the underlying tissues.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes at 4/-, which are obtainable on form E.C.10, and is not advertised to the public.

LLOYD-HAMOL LTD., 3 ST. JAMES'S SQUARE, LONDON, S.W.1 WHITEHALL 8654/5/6

THEODROX

A DEPENDABLE METHOD of administering— AMINOPHYLLINE ORALLY

THEODROX provides a dependable method of oral administration of aminophylline in doses large enough to produce the same high blood levels obtainable with parenteral administration.

Previous investigations have shown that good response is obtained from aminophylline only if a certain concentration of the active component, theophylline, is attained in the blood. Because gastric irritation prevents giving oral doses large enough to produce this necessary blood level, the only dependable way of obtaining this end has been to resort to parenteral aminophylline.

Now there is clinical proof that when aminophylline is combined with* a specially prepared aluminium hydroxide, the stumbling block of gastric irritation can be virtually eliminated, and massive oral doses can be tolerated to produce consistent blood levels comparable to those obtained by parenteral administration. *(1) *(2).

Theodrox is supplied in containers of 25, 100 and 1,000 tablets, each tablet containing Aminophylline B.P., 3 gr. and Aluminium Hydroxide Gel, Dried, B.P.C., 4 gr. Theodrox is also available as Theodrox with Phenobarbitone, each tablet containing in addition $\frac{1}{8}$ gr. of Phenobarbitone B.P.

REFERENCES

* (1) Studies with Two New Theophylline Preparations, *Amer. J. Med. Sci.*, 224: 627, 1952.

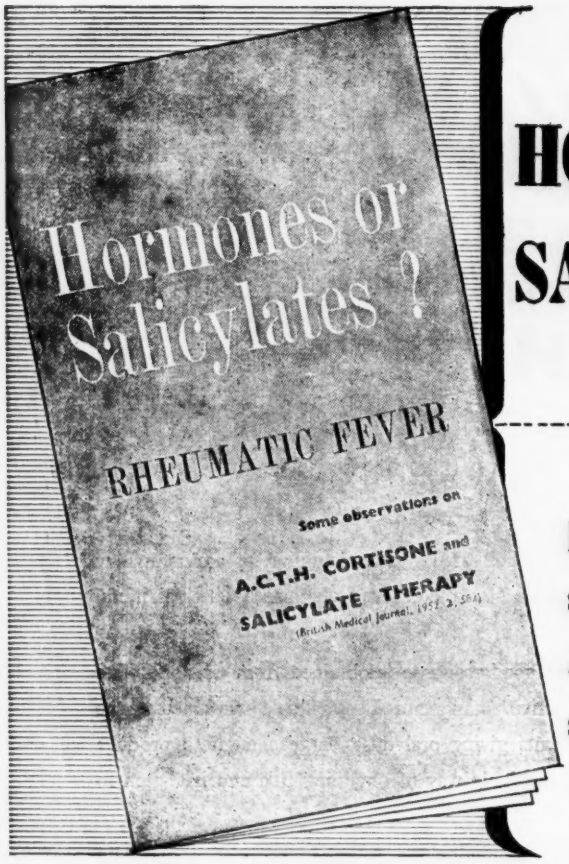
* (2) A New Approach to Increasing Tolerance to Oral Aminophylline, *Postgrad Med.* 13: 432, May, 1953. Abstracted: *Practitioner*, 171: 328, Sept., 1953.

British Patent Application No. 32742/52.

THEODROX is a trade mark of

RIKER LABORATORIES LTD. 29 KIRKEWHITE ST., NOTTINGHAM

Detailed literature gladly sent on request.



HORMONES OR SALICYLATES?

Rheumatic Fever

Some observations on A.C.T.H., CORTISONE and SALICYLATE THERAPY

(British Medical Journal, 1952,2,582)

IN 1951 we published and distributed amongst the Medical Profession a booklet entitled 'The Similarity in the Mode of Action of Salicylates and Cortisone in the Treatment of Rheumatism'.

It is interesting to note the report of the treatment of Rheumatic Fever published in the British Medical Journal (1952, **2**, 582) which provided evidence that salicylates (in the form of Berex) act in a similar manner to A.C.T.H. An abstract of this report is now available in booklet form on request.

BEREX
REGD. TRADE MARK

SUCCINATE - SALICYLATE THERAPY
for the relief of symptoms associated with all rheumatic disorders.

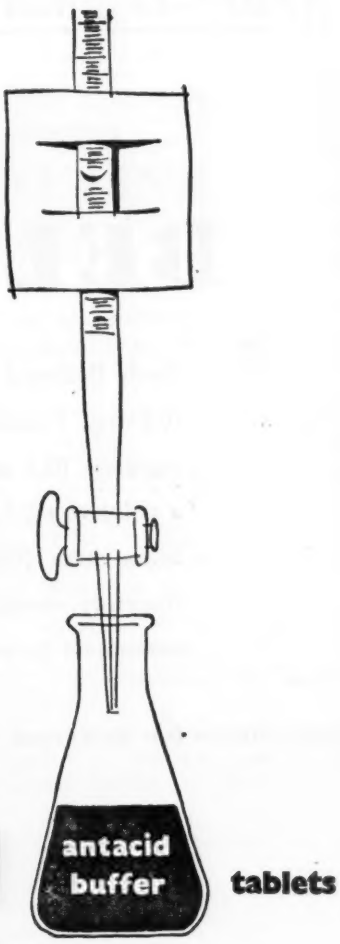
FORMULA: *Each tablet contains Calcium Succinate, 2.8 gr. Acetylsalicylic Acid 3.7 gr.*

BEREX PHARMACEUTICAL CO., MEDICAL DEPARTMENT, 109 JERMYN STREET, LONDON, S.W.1

a new way

to maintain acidity

within controlled limits



In the treatment of GASTRIC HYPERACIDITY and the control of PEPTIC ULCER, this new product acts as an antacid buffer giving prompt action and prolonged effect *within a definite and safe* pH *range.*

Each tablet contains :

Aluminium glycinate (Dihydroxy aluminium aminoacetate)	0·9 Gramme
Magnesium carbonate	0·1 Gramme

PRODEXIN

ALUMINIUM GLYCINATE

tablets

- **Gives prompt relief of pain.**
- **Has a prolonged and stable antacid action.**
- **Raises and keeps gastric pH in the 'safe zone' of 3·5 to 4·5.**
- **Facilitates healing of peptic ulcer.**
- **Is free from such side-effects as acid rebound and constipation.**
- **Pleasant to take ; convenient ; economical.**

PRODEXIN tablets, each in protective wrapping, are available in cartons of 30, at 5/3d. Retail price includes Purchase Tax and is subject to Professional discounts.

Manufactured in the Laboratories of

C. L. BENCARD LTD

PARK ROYAL, LONDON, N.W.10

Neuro-vegetative Dystonia

responds readily to treatment with

BELLERGAL

Each Bellergal tablet contains a vagal inhibitor (0.1 mg. Bellafoline), an inhibitor of adrenergic impulses (0.3 mg. ergotamine tartrate B.P.) and a sedative of the autonomic nervous centres in the brain stem (0.02 g. phenobarbitone). Bellergal therefore exerts a sedative effect on the entire autonomic nervous system.

Indications for Bellergal therapy:

- ★ **Neuro-vegetative dystonia**
- ★ **Menopausal disturbances**
- ★ **Dysmenorrhoea**
- ★ **Pink disease**
- ★ **Motion sickness**

Literature and samples S SANDOZ *available on request*

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EVANS MEDICAL SUPPLIES LTD

announce that the

ORIGINAL NEW LONG-ACTING INSULIN ZINC SUSPENSIONS

NOVO LENTE INSULINS

will be available shortly

NOVO LENTE INSULINS are imported direct from the Novo laboratories in Copenhagen, where these outstanding new insulin derivatives were discovered and developed by Hallas-Møller and his co-workers.

TYPES OF INSULIN	ONSET OF ACTION	APPROX. DURATION OF ACTION HOURS	STRENGTH i.u. per ml.	IDENTIFICATION COLOURS	PRICE ★ per vial of 10 ml.
NOVO SEMILENTE Insulin Zinc Suspension (Amorphous)	Early	12–16	40	Vermilion/Blue	4/4½
NOVO LENTE Insulin Zinc Suspension	Intermediate	24	40 80	Mauve/Blue Mauve/Green	4/4½ 8/3
NOVO ULTRALENTE Insulin Zinc Suspension (Crystalline)	Delayed	24+	40	Brilliant Yellow/Blue	4/4½

**To Hospitals and Retail Chemists*

Characteristics of the *Novo Lente Insulins*

- Extensive clinical trials, first in Denmark and subsequently in the United Kingdom, have shown that they will enable not only mild and moderate but also most severe cases of diabetes to be adjusted on ONE DAILY INJECTION
- They cause no local reaction, because they contain no added protein and have been purified by repeated crystallisation
- Insulin NOVO LENTE will be used most frequently, as one daily injection will stabilize about 90 per cent of insulin-consuming diabetics. In other cases Insulin NOVO SEMILENTE or NOVO ULTRALENTE can be mixed with NOVO LENTE, or used alone—Insulin NOVO SEMILENTE where the onset of action of NOVO LENTE is not rapid enough, Insulin NOVO ULTRALENTE where its duration of action needs to be further prolonged
- Each batch is tested and assayed by the manufacturers, Novo Terapeutisk Laboratorium A/S, in Denmark, and by The Evans Biological Institute prior to release in this country.

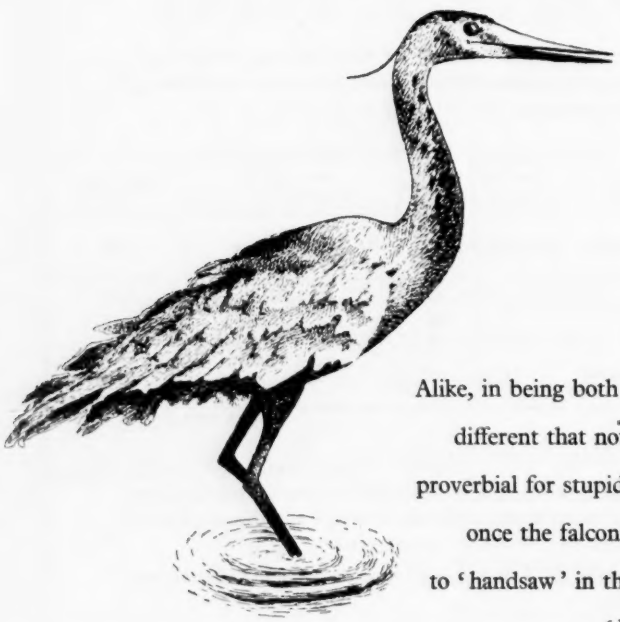
***Further** information is available from the sole distributors*

EVANS MEDICAL SUPPLIES LTD

SPEKE · LIVERPOOL 19 AND RUISLIP · MIDDLESEX

440

Alike yet different



Alike, in being both hunting birds, yet so plainly different that not to know hawk from heron, became proverbial for stupidity. The heron, or hearnshaw, once the falconer's popular quarry, was corrupted to 'handsaw' in the saying quoted by Hamlet:

'I know a hawk from a handsaw'.

'Iodex' and other non-staining iodine ointments are alike in being iodine ointments. In use they are different. In 'Iodex' there are no irritating and staining particles of dross. That is why 'Iodex' is so bland and penetrating.

'IODEX'

non-staining iodine ointment

MENLEY & JAMES, LIMITED, COLDHARBOUR LANE, LONDON, S.E.5

XP63

owners of the trade mark 'Iodex'

Low Dosage—Wide Spectrum Antibiotic!

Aureomycin

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Dramatically Effective—Remarkably Economical

The antibiotic range of aureomycin is unsurpassed . . . A dosage of 1 Gm. daily is usually curative, and the total dose required is lower than with other antibiotics . . . The early use of aureomycin may avoid extensive surgery . . . The abbreviation of hospital stay and convalescence thus made possible by aureomycin saves your patient many times its cost.

PACKAGES:

Capsules: 50 mg., bottles of 25 and 100; 250 mg., bottles of 16 and 100. Dental Cones: 5 mg. tubes of 12. Dental Paste: 30 mg. per Gm., jars of 5 Gm. Intravenous: vials of 100 mg. and 500 mg. Nasal: vials of 10 mg. with dropper. Ointment: tubes of ½ oz. and 1 oz. Ointment (Ophthalmic): six tubes of ⅛ oz. Ophthalmic: vials of 25 mg. with dropper. Otic: vials of 50 mg. with dropper. Soluble Tablets: 50 mg., bottles of 100. SPERSOIDS®: jars of 36 and 75 Gm. Troches: 25 mg., bottles of 25. Vaginal Powder: vials of 5 Gm. (200 mg./Gm.) ®*Trade Mark*

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PRISCOL

ORALLY ACTIVE

PERIPHERAL VASODILATOR

for

RAYNAUD'S DISEASE

OBLITERATIVE ARTERITIS

PERIPHERAL ARTERIOSCLEROSIS

Priscol is of value in all cases where spasm is present and where the collateral blood supply can be augmented.

TABLETS (25 mg.)
Bottles of 40, 200 and 1,000.

PARENTERAL SOLUTION (25 mg./c.cm.)
6 Ampoules of 1 c.cm. R.C. Vials of 10 c.cm.

Ointment	Ophthalmic Ointment	Solution
20g. 1 lb.	5g. tubes	10 c.cm. 100 c.cm.

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'Priscol' is a registered trade mark denoting 2-benzyl imidazoline hydrochloride
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12/3

TOLSEROL

in

fibrositic disorders...

"Mephenesin appears to be very effective in a variety of fibrositic disorders and its virtual freedom from toxicity by the oral route makes it suitable for routine use."

This is an excerpt from a communication which was published in the Lancet of 30th May 1953, p. 1105, and which is concerned with the treatment of various rheumatic diseases by means of Tolserol (mephenesin) Tablets.

The dosage employed was usually 2 or 3 tablets of 0.5 Gm. given every four hours. Tolserol should be administered after meals or after drinking one-third of a glass of milk or fruit juice.

In an earlier trial (Journal-Lancet, July 1951, p. 271) the drug was found to be effective in 76.5% of 200 rheumatic cases treated. Another worker (Indust. Med. & Surg., December 19[illegible], p. 599) employed Tolserol and diathermy in the treatment of "backache" and other conditions associated with skeletal muscle spasm. Of 106 cases, 88.7% returned to full work on or before the third day with minimal or no symptoms, and no toxic effects were noted. A similar response was produced in only 49.2% of a control group treated with diathermy and aspirin or placebo.

TOLSEROL IS PRESENTED AS TABLETS OF 0.5 GM. AND IS AVAILABLE IN BOTTLES OF 25, 100 AND 1,000 TABLETS

E. R. SQUIBB AND SONS

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PRISCOL

ORALLY ACTIVE

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for

RAYNAUD'S DISEASE

OBLITERATIVE ARTERITIS

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TABLETS (25 mg.)
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Ointment	Ophthalmic Ointment	Solution
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TOLSEROL IS PRESENTED AS TABLETS OF 0.5 GM. AND IS AVAILABLE IN BOTTLES OF 25, 100 AND 1,000 TABLETS

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The treatment of hæmorrhoids rests on solid therapeutic grounds when it achieves relief without resort to narcotic or anæsthetic agents; these may mask the symptoms of more serious pathological conditions. Anusol* Suppositories give relief that is completely safe through decongestion, lubrication and protection. They remove inflammatory pressure on the nerve endings, soothe irritation and guard against the complications of bleeding and infection.

Another notable feature of Anusol Suppositories is the economy of the treatment. It is an impressive fact that Anusol Suppositories, dispensed from bulk by a chemist, are less expensive than their National Formulary equivalent. Anusol Suppositories may be confidently prescribed in the knowledge that they represent a most reliable and economical treatment for all uncomplicated hæmorrhoidal conditions.

Anusol Hæmorrhoidal Suppositories are obtainable from all chemists in boxes of 12; also available in packages of 100 for dispensing only, free of purchase tax when prescribed either privately or on the N.H.S. The tax free package of 100 Anusol Suppositories is supplied to the chemist at 16s. 8d. net. Anusol Ointment is supplied to chemists in tubes containing approximately 1 oz.

Anusol
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Bism. Subgall. 2·12%. Bism. Oxid. 0·87%. Resorcin 0·87%. Bism. Oxyiodogall 0·03%. Acid Boric 17·85%. Zinc Oxid. 10·60%. Bals. Peruv. 1·77%

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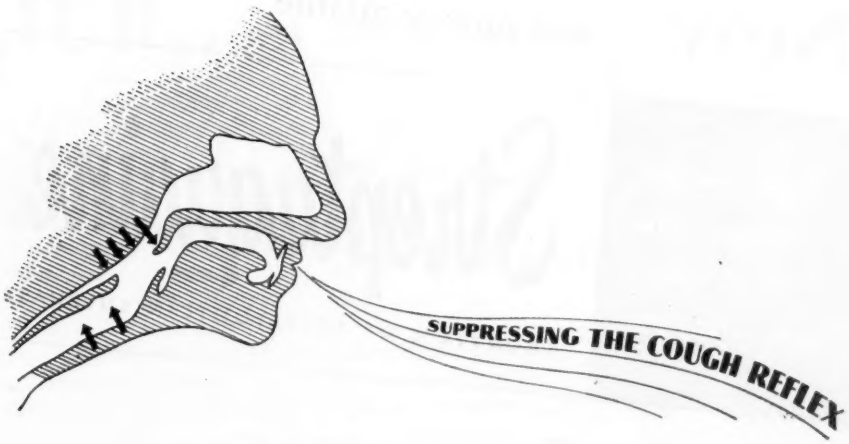

A new basic ether of morphine, Pholcodine (morpholinylethyl-morphine), has been shown to have a powerful action in depressing the cough reflex.

Pholcodine, which has a sedative action superior to that of codeine while being decidedly less toxic, is employed as the active ingredient in a new cough linctus to which the name ETHNINE has been given.

The advantages of ETHNINE lie in its effectiveness with low toxicity, and its freedom from side-effects such as constipation or digestive upset.

ETHNINE is well tolerated by children and adults and is suitable for administration whenever a cough sedative is considered advisable.

ETHNINE

CONTAINING PHOLCODINE

In bottles of 4 and 80 fluid ounces.

Literature and sample on application.

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TELEPHONE BISHOPSGATE 3201 (20 LINES) TELEGRAMS "GREENBURYS BETH LONDON"

New .. and now available

STREPTOMYCIN SULPHATE IN SOLUTION, READY FOR INJECTION

Streptaquaine brand

SOLUTION OF STREPTOMYCIN SULPHATE

'STREPTAQUAINE' SOLUTION presents streptomycin sulphate in a ready-prepared stabilised aqueous solution, intended for intramuscular injection without further dilution. The clinical applications of 'Streptaquaine' Solution are, of course, those of streptomycin sulphate but it is believed that practitioners will appreciate the added convenience of this refinement, particularly as it is offered at no extra cost.

Packs: injection-type vials containing one mega unit (250,000 i.u. per ml.) in stabilised solution: boxes of 5 vials.

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ALLEN & HANBURYS LTD.
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Streptaquaine brand SOLUTION

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THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED
SPEKE · LIVERPOOL

New.. AN OUTSTANDING

Threadworm

TREATMENT

As a result of investigations at The Wellcome Laboratories of Tropical Medicine, 'Antepar' brand Elixir is now offered as a major advance in the treatment of threadworm infestation.

Piperazine hydrate, the active ingredient of 'Antepar', has proved to be far more efficient than any of the traditional oxyuricides, yet virtually non-toxic. In clinical trials a 97 per cent cure rate was achieved at the recommended dose level and no important side-effects were observed.

No special regime of fasting or purging was required; nor were the stringent hygienic precautions, usually associated with threadworm treatment, necessary.

'Antepar' is pleasantly flavoured and readily acceptable to small children. It contains 500 mgm. of piperazine hydrate per fluid drachm, and is available in bottles of 4 fl. oz. (6/6d. plus 1/3d. P.T.) and 20 fl. oz. (24/9d.—exempt P.T.) subject to discount.

- **Outstanding efficacy**
- **Rapid and complete cure**
- **No important side-effects**
- **Simply administered**
- **Pleasantly flavoured**
- **No special regime needed**

'Antepar' BRAND ELIXIR

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd)* **LONDON**

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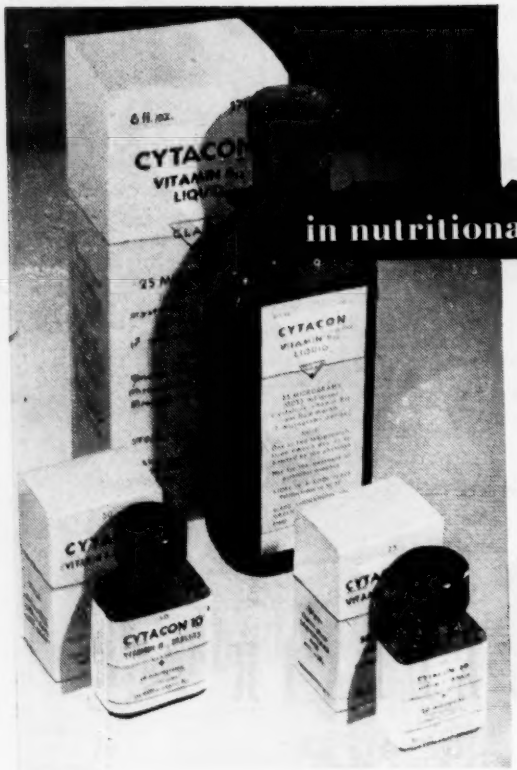

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CHILDREN IN HOSPITAL

PREPARATION FOR OPERATION

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CHILDREN'S reactions to operations vary. Many, especially if over five years old, seem quickly to forget the stay in hospital and its necessary unpleasantnesses. A few seem to behave better afterwards, as if surviving an experience they thought would be bad has given them more confidence in life and in themselves. A considerable number, chiefly among those under five, show changes in behaviour for a shorter or longer period after. The changes are chiefly fears—of the dark, of being alone in the lavatory, of being alone—and regression to more childish behaviour, such as wetting by day or night, wanting to be fed, or negativism. Fears of doctors, nurses, and strange men are frequent; fear of the dark implies fear of separation from the mother which may also show itself as insomnia. In some children a later visit to hospital or doctor reveals fears that were not evident at home.

Negativistic reactions—disobedience, tantrums, spiteful and defiant behaviour—occur chiefly in children of five years or older, and can greatly try parents on the child's return home. Increased dependency is another symptom that can be wearing to a busy mother. It is so common as to be almost a normal sequel.

Coleman (1949) regards psychological trauma after tonsillectomy as a complication as deserving of the doctor's thought as is postoperative bleeding or infection. An operation is often the occasion of a child's first separation from home; or if he has been away before, it was for a happy visit without attendant anxiety. It is difficult for people who work in a hospital to appreciate the anxiety that the special event of going into hospital carries for any but the most self-confident. Strange faces, strange food, a strange routine, an unfamiliar bed—even the ceiling is unusually distant. Langford (1937) studying 20 children with anxiety states found that in 6 the disorder was related to tonsillectomy; for which the children had, as a rule, been poorly prepared. Of another group of 124 children who had had operations, often a tonsillectomy, 25 had emotional upsets for longer or shorter time (Levy 1945). The symptoms were most common at the ages of one and two, probably because the children were then more dependent on their mothers, did not understand what was happening, and could not get rid of their anxiety in words or play. Night terrors were often seen in these younger children for months.

In Levy's series, in 13 of the 25 children who were upset nothing beforehand had suggested that this would happen. It is true that a child who has shown lack of self-confidence is more likely to be upset but one cannot be sure that a happy, confident child of two, three, or four will necessarily show no disturbances. Sometimes, when a first operation has produced little disturbance, a second will disclose that the first left after-effects.

All children who come into hospital for operations experience some degree of anxiety. The film *A Two-year-old Goes to Hospital* (Robertson 1952) shows clearly how a happy self-controlled little girl reacted. She pulled at her lips, clung to her doll, was unusually quiet, took five minutes to thaw when her mother visited her, and so on. This film opens one's eyes to the quiet unhappiness that a young child in hospital may suffer much of the day, almost unnoticed by the nurses and doctors. We do not want to see the grief and we see only a "good" quiet child. If a child is crying, we may equate this crying to the crying of a small child who is hungry or has fallen. We tend to dismiss all crying as common and unimportant.

Three Anxieties

The three main anxieties which centre round an admission to hospital for operation are the separation from home, the anæsthesia, and the operation.

SEPARATION

Some children under four feel so lonely and deserted that they do not seem to notice the operation much. This is especially true of children who have to stay longer than they expected and of children who are not too trusting of their parents' statements (Jessner and Kaplan 1949). Older children can understand the separation as an episode; the younger child has a more intense attachment to his mother and may react severely, and even if he settles down he may reveal that he felt intensely by his behaviour on returning home. Bowlby (1951) has shown that mental health and ability to get on with people in later life may depend on a warm and continuous relationship with a mother (or permanent mother-substitute). Severe deprivation can seriously disturb personality. It seems probable that shorter deprivations may lead to slighter, but still handicapping, disorders such as diminished self-confidence. Even if it did not, sadness in small children is something to be avoided as far as is in our power. The child reasons, and if he is anxious he may conclude that his mother left him because she did not love him. To an anxious person in a strange world the most fantastic idea may seem reality.

ANÆSTHESIA

The fear of losing control as they feel themselves slipping away under the anæsthetic is common in older children (of say six to twelve years) given ether for tonsillectomy (Jessner and Kaplan 1949). Children sometimes have unexpressed foolish fears of what will be done while they are under the anæsthetic; sometimes from what thoughtless children or grown-ups have said. A kindly nurse said "what lovely eyes you have; I wish you'd let them change them for mine while you're under the ether." Some small children genuinely fear they may die; a little girl's first statement on coming round was: "I didn't die."

OPERATION

Children's ideas about operations, and even about minor incidents of hospital routine, can be surprising. Some children will say they want their tonsils done so that they can have ice-cream like their brother had after tonsillectomy. Some imagine they are to have major procedures that have happened to their parents—thyroidectomy, gastrectomy—details of which have been overheard at home.

Sometimes needles, rectal temperature-taking, hospital clothes, or being put into a cot are disturbing; children sometimes interpret them as punishments for real or imagined naughtiness.

Some have remarkable fantasies as to what happens in so-called minor operations. The child, newly admitted for tonsillectomy, may silently assume that this is what has been done to the child in the next bed with his eyes bandaged. Incidentally quite a few children wonder what becomes of the appendix or tonsils removed and rather resent that they are thrown away as rubbish.

According to Jessner and Kaplan (1949), the children who cope best with hospitalisation are the confident children who can transfer positive affection from the mother to the nurse; those who interact with other children; those who are interested in games and toys; those who can express themselves indirectly by crying, anger, or naughtiness, with only moderate limitation or self-

control. "The child should be given the opportunity to express as much of his feelings as his own standards allow him to. One should not interfere with this capacity for self-expression by an effort to coach the child to be good and brave."

It seems important to let the child set his own standard of self-control, reassuring him where possible about his fears but accepting these and his tears with sympathy, remembering the therapeutic benefit of a good cry for grief-stricken adults, and remembering also that a temper tantrum is itself a frightening experience for a child, for which he needs to be comforted.

Some children behave better and are happier after operation because their health is better. Among older ones, a few may be better for the emotional experience. Most normal children and some "insecure" children escape lasting emotional sequels. Many more or less disturbed children and some normal children show evidence of anxiety after operations (Levy 1945). Some children who seem to take the experience very easily, show by behaviour long afterwards that they have suffered; asthma may date from an operation such as tonsillectomy.

How the Doctor Can Help

Can I see another's woe
And not be in sorrow too?
Can I see another's grief
And not seek for kind relief?

Blake. Songs of Innocence.

What can we do about these possible effects and after-effects of a stay in hospital? Coleman (1949) suggests the following helpful measures:

1. Give the child a forthright and honest explanation of the reasons for the operation.

2. Try to avoid the element of surprise and confusion at the hospital. A recognisable picture of the hospital, the operating-room, and the white-gowned nurses and doctors should be presented in advance.

3. Explain that the purpose of anæsthesia is to spare the child pain during the operation. Assurance must be given that this forced sleep is temporary and will be followed by complete awakening and survival. The ideal anæsthetic is one chosen for surgical efficiency and psychic consideration.

4. Emphasise to the parents the need for constant reassurance and affection in the postoperative period.

5. Whenever possible, the doctor personally should lead the child from the mother to the operating-room. The previously established child-doctor rapport here pays dividends in the sustained security.

6. Permit overt expression of postoperative hostility, rather than suppress it. The psychic damage of such suppressions is fraught with subsequent danger.

Levy (1945) and Jessner and Kaplan (1949) suggest postponing operations, if possible, until the child is at least four, when it is less disturbing for him to be separated from his mother and when he can understand something of the meaning of the operation. The disturbance is perhaps least between the ages of five and ten years. Operations should also be postponed if possible in children who are unusually timorous or dependent on their mothers. If operation is unavoidable special care should be taken before, during, and after hospitalisation. Operations are also best avoided at a short interval after a previous stay in hospital or other separation, after a family bereavement, or when the mother is having another baby, or even while the family is moving house.

BEFORE THE OPERATION

It is clear from *A Two-year-old Goes to Hospital* that a familiar toy, slippers, clothes, or other tangible tie with home can be a reassuring comfort. Parents should not be ashamed to let the child bring the favourite shabby doll or toy. In this film a doll and a very shabby bit of blanket were wisely allowed to the child with no qualms about sepsis: after all virulent germs are rare in ordinary households.

"One youngster in the Harriet Lane Home (the children's hospital at Johns Hopkins Hospital) had a pair of riding boots which he insisted on wearing in bed. They stayed on his feet in bed for several days except when he allowed the nurse to take them off. He wore them up to the operating room and only permitted them to be taken off after arrival there" (Trainham 1949).

The parent should indeed be specifically instructed to bring some such toy. The familiar object will reassure a child because he knows himself as the owner of the object—and there it is beside him in his bed. For similar reasons the child should come back from the theatre to the same bed in the same room he was in before; otherwise he may worry that his mother will not know where he is.

In running the ward, discipline and routine can be adapted to the individual child's need. Threats and punishments are out of place and a period in hospital is rarely the right time to teach better manners or habits or to cure children of sucking their thumbs or even their dummies.

A preoperative sedative is nearly always valuable, although some children become excited and more tense. The anæsthetist does a great deal to allay a child's fears, especially if he knows what these fears are likely to be. McDonald (1953) has described the usefulness of rectal sodium thiopentone in lessening postoperative emotional disturbances in children.

Twenty-four hours in hospital before operation allows a child to get over his first panic and to establish relations with his fellow patients, the nurses, and doctors. Admittedly this lengthens the period of separation, and some have recommended that operations on young children should be done in the home. But the possibility of post-operative complications is a potent argument against this. "The solution is to bring the home into the hospital" (Foord 1949).

The doctor who admits the child to hospital should be mindful of childhood's problems. The pædiatric house-officer often appreciates these better than his surgical colleague who has had no special experience in this field and may forget to explain things to mother and child.

The Mother in Hospital

The mother brings the child to hospital and in some hospitals gives him his bath and puts him in his cot; it is certainly possible for her to be there while the nurse gives him his bath: if he is dirty she may learn better standards of cleanliness. Even the examination for head lice need not be postponed till the mother is absent, for mothers of children at local-authority schools are used to their children's heads being inspected. After the bath the mother explains things to the child again and having told him when she will be back again, says she is going away and goodbye. With babies, breast-fed or not, it is ideal for the mother to come in with the child. In New Zealand the Pickerills, for their cleft-palate operations, have a hospital built on the holiday-camp chalet principle for mothers to come in with and care for their babies.

Daily visiting is always wise and humane. If a mother is anxious, she should be reassured by explanation. Mothers can be led to understand how their anxiety can adversely affect their children. In an air-raid a terrified mother with her child in her arms was running to a shelter when she realised her terror was felt by her child. She slowed to a walk, looking up and pointing out the "lovely aeroplanes" droning above.

Sometimes parents are distressed because their children cry or turn away when they come to see them. Warn

them that a child may remember in a rush how much he has been missing. Anna Freud has said it is important to tell children in hospital three things:

He is still very much loved.
He is not being punished.
He is getting better.

Both nurses and mothers should put these things into words to all children, however small and however happy they seem. It can do no harm and may give great relief. Doctors, nurses, and parents all do well to give a child, however small, credit for understanding—or feeling—what is said or felt.

When it is suggested that mothers should come into hospital with their children, it is usually pointed out that they may be anxious and upset the child. Mothers vary, and this would be true of some of them; but the comment is sometimes a rationalisation of a desire to have the mother out of the way. This is not always an entirely unreasonable attitude, for the confident attitude of the regular nursing staff is helpful to a child.

It has been suggested that mothers should accompany children to the induction, but it may be upsetting to a child to find that his mother coöperates in the "attack" on him. If a preoperative sedative is given it seems unnecessary for the mother to go to induction of a semi-conscious child. When a child does not have a pre-operative sedative, he should be carried to the anæsthetic room by a familiar nurse, or accompanied by the nurse if a porter carries him, and that this nurse should stay with him until he is unconscious. Certainly being trundled on a trolley lying flat, so that one cannot see where one is going, is alarming. The first waking of a child after operation would alarm some mothers, and the child probably would not realise whether she was there or not. The mother should, however, visit on the evening of the day of operation. The ward sister should warn her if the child is likely to be confused or bloody. Although children in hospital are more difficult when their mothers are admitted with them, the postoperative difficulties are so much less that Escalona (1949) agrees that it is worth while.

Another suggestion for "bringing the home into the hospital" is to allow children to eat home-cooked food. Without experience it is difficult to say whether this would be worth arranging; but food prepared by his mother might mean a great deal to the child, apart from the fact that children are conservative and like the sort of food they are used to. Some children comfort themselves in hospital by eating more than they do at home, for in a child's mind food and his mother are closely associated.

Telling the Child

The parents have an extremely important part to play in preparing the child before he goes into hospital. It is important that they and he both know what will happen there. The mother and father must know what will happen in hospital so that they can answer the questions the child is certain to ask. It is a good plan for the child to enact at home the admission to hospital, the anæsthesia, and the operation.

Children will also be helped if they know beforehand that they are likely to miss their parents and may be lonely. A mother of two children, aged 8 and 10 years, was divorcing her husband. She explained the situation to the little girls, who remained with her throughout. Later the 10-year old said "Mummy, you told us what would happen, but you didn't tell us how we'd feel" (Pendred 1953). Edelston (1943) has remarked that "in clinical experience the determining factor (for symptoms after separation) seems to be the degree of rejection or insecurity *felt by the child*."

How long beforehand should the child be told? Some say months, some say a few days. It probably should be shorter for the more timorous children. Certainly the child should be told so that what happens is not all unexpected.

The parents and everyone else concerned should also know what *not* to tell children. A medical student tells a child about to have a laparotomy that "it won't hurt." Yet the child's abdomen *will* hurt after the operation. A mother, as she leaves, tells her child that she "will be back in a minute." Another tells her child that she will be sleeping in the room below; (so the poor child later went on to the balcony and screamed "Mummy, Mummy"). A little girl is told to "behave—or she will be left in hospital"; an anxious boy about to go into hospital is told to stop playing with himself "or the doctor will cut it off while you are under the anæsthetic."

These remarks are not made in malice even though they are untrue and wrong. The parent says "Oh, he is too young to understand," which is almost certainly not true; or "I didn't want to make him unhappy," although in the long run the discovery of deceit is more upsetting. Undermining the child's confidence in what he is told does not help the hospital staff, and often a child can accept unpleasant news more easily from a parent. It is fairly easy to understand a medical student with no experience of bringing up children comforting a child by misleading statements; it is less easy to understand parents doing this. Telling such palpable untruths does not make bringing up children easier, and apart from that, it is a poor example. Anyway, telling the truth is an important principle of science in general. It might "ring the bells of heaven" quite loudly if we stopped telling children "this won't hurt you" just before sticking a needle into them.

Parents, and especially the mothers, need guidance in preparing a child for the experience of being in hospital. It might be useful to prepare a leaflet for them to read. One thing is certain; adults deceive themselves when they dismiss the facts that small children in hospital are often anxious or sad, and that such anxiety often permanently lessens the child's reserves of self-confidence. They are in fact, resorting to a functional blindness by which they spare themselves awareness of children's suffering.

This article arose from a conversation with Miss Tanner, sister of the children's surgical ward at Guy's Hospital, and I thank her, Miss Duncombe of the children's medical ward, Mrs. M. Oppé, and Dr. P. E. Polani, Dr. D. G. Vulliamy, Dr. T. E. Oppé, Dr. P. J. Lyne, and Dr. D. M. E. Allen of the department of child health, Guy's Hospital, for their help.

The influence of Dr. H. C. Cameron's example of understanding and sympathy with children will be evident, and it is appropriate that Guy's was the first teaching hospital in London to have regular daily visiting of children.

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RADIOGRAPHY IN THE DIAGNOSIS OF HYALINE MEMBRANE

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With illustrations on plate

THE diagnosis of hyaline membrane within the lungs of infants dying in the first few days of life can only be made with certainty post mortem. The association of this membrane with atelectasis is now increasingly recognised; and, since atelectasis is generally accepted as the most important single cause of death in premature infants, the clinical importance of being able to diagnose hyaline membrane during life is obvious.

Claireaux (1953), in his histological examination of the lungs in 376 cases of neonatal death, found hyaline membrane in 108 (29%), of which four-fifths were in premature infants: and in no less than 21% of the 376 cases hyaline membrane was the only abnormality discovered.

Unfortunately it is no easy matter to diagnose the cause of a baby's respiratory difficulties on clinical grounds alone. At best a shrewd guess may be made that hyaline membrane may be present if a baby, within the first few hours of life, exhibits increasing dyspnœa, grunting respirations, inspiratory recession (either subcostal, intercostal, sternal, or suprasternal), the use of accessory muscles, cyanosis, poor air entry, and bouts of apnœa. The diagnosis is still more likely if the baby is premature or has been delivered by cæsarean section because of maternal diabetes; but a similar clinical picture can be evoked by other conditions such as intraventricular and subdural hæmorrhage, primary atelectasis, pneumonia, œsophagotracheal fistula, diaphragmatic hernia, and pulmonary hypoplasia. The ante-mortem diagnosis of hyaline membrane might be of little more than academic interest were it not for the possibility of treatment and the bad prognosis which these clinical signs often betoken.

To learn how far this pathological process is reversible demands an ability to diagnose it before death, and the success of any treatment adopted can hardly be substantiated without the diagnosis, except perhaps on the quicksands of statistics, if the infants recover and do not come to necropsy.

In our researches into neonatal atelectasis and its treatment it is therefore natural that we should have invoked the help of radiology.

The extent to which babies in respiratory distress are not radiographed is common experience, and is possibly part of the traditional "no-touch" technique. Nevertheless, both in diagnosis and in assessing progress, we have found radiological investigation of considerable help when taken in conjunction with clinical examination, spirometry, and other diagnostic aids.

Surprisingly little has been published in this respect. Caffey (1945) noted radiological signs in the lungs of premature infants but dismissed their pathological significance. An article by Donald and Lord (1953) on augmented respiration in the treatment of neonatal atelectasis was illustrated by radiographs showing radiological signs in some of their cases in which hyaline membrane was found at necropsy. Two months later Meschan et al. (1953) published a case of proved hyaline membrane and demonstrated radiological changes which are now familiar, but we have been unable to find a sequence of radiographs comparable to those we now reproduce.

Three different stages in the evolution of hyaline membrane have been identified radiologically and correlated with the clinical and necropsy findings:

(1) First there appears a fine miliary mottling throughout the lung fields.

(2) This is followed in the progressive lesion by a coarser and more coalescent type of opacity. At this stage the bronchial tree is often clearly demarcated.

(3) Finally the shadows become confluent as a result of lobar or lobular consolidation and collapse.

The baby may die of some other lesion—e.g., associated intraventricular hæmorrhage—before all three stages are radiologically demonstrable and unless radiographs are taken every few hours it is likely that the course of events will not be observed.

Up to date 28 newborn infants at Hammersmith Hospital with respiratory distress have provided points of radiological interest which are here described. Many other cases so investigated do not concern the subject of this paper and have been omitted. The cases have been divided into five groups as follows:

Group I.—Significant radiological signs, and hyaline membrane found at necropsy (11 cases).

Group II.—Clinical signs of atelectasis, but no radiological signs, and hyaline membrane not found at necropsy (8 cases).

Group III.—No radiological signs, but hyaline membrane found at necropsy (0 cases).

Group IV.—Radiological and clinical signs present but child recovered; diagnosis therefore unproven (4 cases).

Group V.—Radiological signs present, but lesions other than hyaline membrane at necropsy (5 cases).

The last group might be called the false positives.

Case-records

GROUP I

(Radiological Signs Confirmed at Necropsy)

Case 1.—One of twins, the other being anencephalic, delivered at 32 weeks. Birth weight 3 lb. 8 oz. Cyanosed, grunting, and clinical signs of atelectasis at 1 hour. Augmented respiration produced temporary improvement only. Died at $9^3/_4$ hours.

Radiography at 3 hours showed fine mottling but no lobar collapse (fig. 1). At 8 hours radiography showed coarse mottling, the degree of collapse was progressive and the right lower lobe appeared solid (fig. 2). At necropsy there were almost no aerated areas of lung, and microscopy showed hyaline membrane. Death was attributed to atelectasis, but intraventricular hæmorrhage was a contributory factor.

Case 2.—Lower-segment cæsarean section at term for antepartum hæmorrhage. Birth weight 6 lb. 8 oz. Remained well for seven hours, when cyanosis occurred and signs of atelectasis rapidly developed. She was intubated at $9^1/_2$ hours, and oxygen was supplied with intermittent positive pressure. Respirations were augmented from 11 hours with temporary improvement, the endotracheal tube remaining in situ, but for technical reasons the treatment was discontinued after 6 hours and the child died at $17^1/_2$ hours.

At $9^1/_2$ hours radiography showed coarse mottling, and post mortem it showed total collapse. At necropsy only the anterior border of the right upper lobe floated, and the presence of hyaline membrane was confirmed histologically. Death was attributed to secondary atelectasis.

This case has previously been described with other illustrations (Donald and Lord 1953, case D1).

Case 3.—Delivered at 33 weeks. Birth weight 4 lb. 1 oz. Cried at once, but respirations became irregular with grunting and inspiratory recession. Died at 7 hours. At necropsy death was attributed to atelectasis. A subdural hæmorrhage on the right was regarded as a contributory factor. No pulmonary aeration was macroscopically visible, and on microscopy the alveolar ducts and respiratory bronchioles were seen to be overdistended and lined with hyaline membrane. The radiograph before death showed coalescent shadows in peripheral lung fields, with sharply outlined bronchial tree (fig. 3), and post mortem almost complete deflation (fig. 4) in spite of attempts to reinflate after death.

In the absence of earlier films it might be difficult in fig. 3 to distinguish between primary atelectasis and advanced hyaline membrane on radiological evidence alone, but the prominent bronchial tree is significant and may suggest hyaline membrane with peripheral atelectasis.

Case 4.—Delivered at 28 weeks. Birth weight 2 lb. 1 oz. Spirometry at 2 hours showed a minute volume of 410 ml., quiet respiration. Radiography at 11 hours showed incomplete aeration, and death occurred at 12 hours. At necropsy a large intraventricular hæmorrhage was found responsible for death, but the lungs showed only patchy aeration of the upper portions of both upper lobes and the right middle lobe. The latter alone floated. Histologically many respiratory bronchioles and alveolar ducts were overdistended and lined by hyaline membrane. The surrounding lung was collapsed. There were also signs of early pneumonia.

Without the earlier spirometric record one might have been in doubt whether the radiological signs were those of primary atelectasis or hyaline membrane.

Case 5.—Alleged gestation 28 weeks, probably 32 weeks. Birth weight 4 lb. 2 oz. There was sternal recession, cyanosis, and grunting. His condition steadily deteriorated, and at the age of $4^1/_2$ hours respiration was augmented, with improvement in minute volume, but seal leaks developed at 9 hours. Died at $10^1/_2$ hours.

Radiography shortly after admission at $2^1/_4$ hours showed fine stippling throughout the lung fields with clear definition of the bronchial tree; and a further film at 10 hours showed less aeration and coarser and increased mottling. At necropsy only the infero-anterior border of the right middle lobe was found aerated, and the presence of hyaline membrane was confirmed on microscopy. Death was attributed to secondary atelectasis.

Case 6.—Breech delivery at ?26 weeks, following antepartum hæmorrhage. Birth weight 2 lb. 8 oz. There was pronounced recession and grunting. Became moribund at 5 hours and died at 8 hours. Radiography at 5 hours showed almost no evidence of pulmonary inflation, but the bronchial tree was well outlined.

In the absence of earlier radiography it would be difficult to distinguish the radiological appearances from those of primary atelectasis, apart from the possible significance of the demarcation of the bronchial tree. At necropsy death was attributed to atelectasis, there was little evidence of aeration, and microscopy showed hyaline membrane.

Case 7.—The third of triplets delivered at the 33rd week, the mother having pre-eclamptic toxæmia. Birth weight 3 lb. 15 oz. Initial condition good, but grunting respiration supervened, with severe recession. At 7 hours respiration was augmented, until techincal troubles developed after three hours. Recession persisted, and death took place at 20 hours.

Radiography at 6 hours and 12 hours showed coarse mottling, which in the later radiograph had become more pronounced. The bronchial tree was well demarcated. At necropsy both lungs were unaerated, and microscopy showed extensive hyaline membrane. Death was attributed to atelectasis.

Case 8.—Delivered at ?34 weeks. Birth weight 4 lb. 6 oz. Cried well at birth but became cyanosed. Subcostal recession was conspicuous within ten minutes. Respirations were grunting. Inspiration was augmented intermittently with positive pressures from the age of 35 minutes onwards, with only temporary improvement. Repeated cyanosis was followed by death at 9 hours.

Radiography at $3^1/_2$ hours and half an hour before death showed bilateral atelectasis involving segments of upper and lower lobes. The bronchial tree was well outlined, and the second radiograph showed little improvement. At necropsy there was only patchy aeration of the right lung (positive-pressure insufflation had been continued post mortem). Microscopy revealed hyaline membrane. Death was attributed to atelectasis, although there was also a small intraventricular hæmorrhage.

Case 9.—Precipitate delivery at 29 weeks after painless antepartum hæmorrhage. Birth weight 3 lb. 13 oz. Severe asphyxia at birth, with much inspiratory recession. Condition rapidly deteriorated, gastric oxygen was administered, but the heart stopped after two hours. Radiography immediately after death showed total collapse of both lungs, without any evidence of aeration (fig. 5). Necropsy showed gross atelectasis, and on section the lungs were found to be slightly expanded as a result of aspiration of liquor amnii. Some of the alveolar ducts showed developing hyaline membrane.

This radiograph differs from that of the previous case particularly in the absence of demarcation of the bronchial tree, and we are inclined to regard this picture as essentially one of primary atelectasis although hyaline membrane was found.

Case 10.—One of twins. Breech delivery at 27 weeks. Birth weight 2 lb. 2 oz. Considerable recession, mainly subcostal, and respiration was augmented. Repeated cyanosis ensued and was followed by death at $38^1/_2$ hours.

Radiography at $2^1/_2$ hours, 14 hours, and 19 hours showed "granularity" and outlining of the bronchial tree. At necropsy the right lung floated as a whole, but only the middle lobe was reasonably well aerated. Both lobes of the left lung sank, and only the anterior border and lower tip were aerated. There was a large bilateral intraventricular hæmorrhage, and clot was present in the fourth ventricle. Death was attributed to this, but the lungs on section revealed early hyaline membrane as well, constituting a contributory factor.

The other twin (mentioned elsewhere) showed radiologically good expansion, and no hyaline membrane was found post mortem. It too died of intraventricular hæmorrhage. It appears that the finer the granularity the earlier is the stage of development of hyaline membrane.

Case 11.—Delivered at 35 weeks. Birth weight 3 lb. 3 oz. Baby was admitted at the age of 6 hours with pronounced inspiratory recession and grunting respiration. Condition at birth initially good. During the first 30 hours respirations were intermittently augmented, with temporary improvement in the child's colour, but recession persisted. Jaundice developed at 62 hours, with hardening of the skin. Death took place at 68 hours.

Radiography at 8 hours (fig. 6), 11 hours, 26 hours, about 36 hours (fig. 7), and 48 hours (fig. 8) showed very fine mottling throughout both lungs, with partial deflation on the left which progressed in subsequent films, but in the 48-hour film some re-expansion of the left lung had taken place and the mottling throughout had decreased, suggesting regression in the alveolar deflation. At necropsy the left lung sank, the right lung floated and showed partial aeration, and microscopy showed extensive hyaline membrane, vascular congestion, and some intrapulmonary hæmorrhage. Death was due to atelectasis.

GROUP II

(Cases in which the Diagnosis of Hyaline Membrane was Considered but Excluded by the Help of X rays)

Case 12.—Lower-segment cæsarean section at 37 weeks for maternal diabetes. Birth weight 8 lb. 2 oz. Inspiratory recession was marked during the first 36 hours, but spirometry showed improving minute volume, and radiography at 30 minutes showed full expansion, which was confirmed 24 hours later.

In view of the well-known tendency of hyaline membrane to develop after cæsarean section for maternal diabetes this information was valuable.

Case 13.—Breech delivery at 26 weeks. Birth weight 1 lb. 11 oz. At birth the baby was toneless and shocked. Respiration was augmented intermittently until the age of 11 hours. Condition remained satisfactory until 24 hours, when cyanosis developed. Death took place suddenly at 32 hours. Radiography at 6 hours showed clear lung fields, and post mortem showed negligible pulmonary aeration and absence of bronchial-tree markings. At necropsy there was only slight aeration of the right middle lobe anteriorly and the anterior borders of both lower lobes. On section the lungs were found to be immature and many of the alveoli were lined by cuboidal epithelium. There was no hyaline membrane. Death was due to atelectasis, which was evidently secondary but not associated with hyaline membrane.

Case 14.—Abortion at 26 weeks. Birth weight 1 lb. 10 oz. Respirations were very shallow and were augmented until at 8 hours the condition was greatly improved, and baby was transferred to an incubator.

Radiography at 12 hours showed no evidence of pulmonary consolidation nor deflation. Death occurred at 26 hours from intraventricular hæmorrhage. The lungs showed only partial aeration (about 50%), and on microscopy atelectasis appeared almost complete except for groups of alveoli near the surface of the upper lobes. Many alveoli contained acidophil debris but without hyaline membrane.

Case 15.—Abortion at 27 weeks. Baby cried at birth, but immediately became grey. Aspirated, and respiration was augmented during first 3 hours because atelectasis was obvious. Condition improved considerably, and radiography at 3 hours showed fairly good expansion and no evidence of collapse. Transferred to incubator at 3 hours. Died at 8 hours. At necropsy the upper lobes were quite well aerated, but the lower lobes sank. There was no hyaline membrane, and death was due to intraventricular hæmorrhage.

Case 16.—First of twins aborted at 27 weeks. Birth weight 1 lb. 11 oz. Baby was pink at birth and cried well, and there was only slight recession.

Radiography at $4^1/_2$ hours showed good pulmonary expansion, and at 22 hours "excellent expansion." From 20 hours onwards there were increasingly frequent attacks of cyanosis, and the baby died at $38^1/_2$ hours. At necropsy all the lobes floated, and on microscopy small areas of collapse were seen alternating with areas of over-distension. Hyaline membrane was absent, apart from an occasional minute fragment. Death was due to intraventricular hæmorrhage.

Case 17.—Delivered at 32 weeks. Birth weight 3 lb. 12 oz. Condition was good at birth, but there was subcostal inspiratory recession.

Radiography on the first and second days of life showed full expansion. Death took place at 46 hours. Intraventricular hæmorrhage was found at necropsy, but lung expansion was very good, and there was no sign of hyaline membrane.

Case 18.—Second of twins. Forceps delivery at 34 weeks for maternal eclampsia at full dilatation. Birth weight 3 lb. 9 oz. Consistently poor minute volume. Respirations were augmented with some improvement.

Radiography at 13 hours showed good aeration of both lungs, but death took place at 51 hours. At necropsy a large tentorial tear was found. The lungs floated but were congested, and there were patchy alveolar hæmorrhages. There was no hyaline membrane, but there was widespread patchy pneumonic consolidation.

Case 19.—Delivered at 32 weeks. Condition at birth was very good. Birth weight 3 lb. Spirometry at 15 minutes showed a minute volume of 333 ml. with the baby quiet, and 827 ml. with the baby crying. At 1 hour the baby, during a burst of crying, achieved a minute volume of 1500 ml.

Radiography at 1 hour 5 minutes and $4^1/_2$ hours showed good pulmonary aeration, although in the earlier stage there was some crowding of the markings at the base on both sides. The signs did not resemble those we have come to associate with hyaline membrane. The second radiograph showed improved expansion on the left but no change on the right. The child survived.

GROUP III

(Negative Radiological Signs with Hyaline Membrane found at Necropsy)

There have been no cases in this group to date.

GROUP IV

(Radiological Changes Present but Infants Lived and Hyaline Membrane therefore Not Proven)

Case 20.—Delivered at 32 weeks. Birth weight 3 lb. 8 oz. Severe atelectasis, but minute volumes improved spontaneously during first two days. Radiography at 2 hours showed coarse mottling, which had mostly cleared on radiography at 16 hours. Radiography on the third day showed no mottling at all. The baby recovered.

Case 21.—Rapid delivery at 28 weeks. Birth weight 2 lb. 15 oz. Condition at birth good, but grunting and subcostal recession developed within 50 minutes.

Radiography at 1 hour showed incomplete expansion of right upper and middle lobes, with some fine mottling consistent with alveolar collapse. Spirometry at 65 minutes showed a minute volume of 234 ml. Respiration was augmented, and minute volume rose to over 600 ml. by 5 hours 50 minutes. Further radiography at 7 hours showed some expansion in the right upper and middle lobes. The child has since done well.

Case 22.—Delivered at 33 weeks. Birth weight 3 lb. $12^1/_2$ oz. Colour bad and atelectasis gross. Respiration was augmented, and minute volume slowly improved from 242 ml. to 669 ml. at 11 hours, with quiet respiration. Child has since done well, although some degree of sternal recession persisted for a further 48 hours.

Radiography at $7^3/_4$ hours and $10^1/_2$ hours showed mottling and outlining of the bronchial tree.

Case 23.—Delivered at 32 weeks after antepartum hæmorrhage. Birth weight 3 lb. 7 oz. Vigorous, but respirations were grunting, and there was subcostal recession which persisted for 2 days. Minute volume of 507 ml. at $2^1/_2$ hours with the child quiet.

Radiography at $1^1/_2$ hours (fig. 9), 8 hours, and on the 3rd day, 4th day (fig. 10), and 19th day (fig. 11) showed diffuse mottling throughout at first which gave place to a coarser variety which in patches appeared somewhat confluent. The radiograph on the 19th day showed these changes to have disappeared. The child has continued to do well.

GROUP V

(X-ray Changes Indicating Pulmonary Lesions but Hyaline Membrane not Confirmed at Necropsy)

Case 24.—Delivered at 34 weeks. Birth weight 3 lb. 11 oz. Initial condition good, but clinical signs of atelectasis developed. Minute volume 220 ml. at 4 hours but improved to over 1100 ml. after augmented respiration. For technical reasons the treatment was abandoned after two hours. Recurrent attacks of cyanosis. Death took place at 27 hours.

Radiographs taken at 4 hours, 8 hours, and shortly after death (fig. 12) showed a very fine stippling and left basal atelectasis. These appearances became more pronounced in each of the successive films. At necropsy there was a small intracranial hæmorrhage. Pulmonary aeration macroscopically appeared good. Histology showed numerous mucous plugs in the bronchioles, but there was no hyaline membrane. Possibly if the baby had lived longer, the recognised pattern of hyaline membrane might have developed. Other illustrations of this case have been published (Donald and Lord 1953, case B).

Case 25.—Delivered at 26–28 weeks. Birth weight 1 lb. 6 oz. Temperature on admission was 88°F, and there was some recession on inspiration. Baby died suddenly, without any warning attacks of cyanosis, at 26 hours.

Radiography at 7 hours showed very poor aeration, and at 20 hours some improvement, but there was extensive coarse

LEGENDS TO ILLUSTRATIONS ON PLATE

MR. DONALD AND DR. STEINER

Fig. 1 (case 1)—Aged 3 hours. Fine mottling throughout lungs, suggesting alveolar collapse.

Fig. 2 (case 1)—Aged 8 hours. Coarse mottling and collapse of right lower lobe.

Fig. 3 (case 3)—Aged 6 hours. Coalescent shadows and outlining o bronchial tree.

Fig. 4 (case 3)—Post mortem. Almost complete deflation and outlining of bronchial tree.

Fig. 5 (case 9)—Post mortem. Total bilateral collapse and bronchial tree not outlined.

Fig. 6 (case 11)—Aged 8 hours. Fine mottling and partial deflation of left lung.

Fig. 7 (case 11)—Aged 36 hours. Mottling and progressive deflation of left lung.

Fig. 8 (case 11)—Aged 48 hours. Regression of signs of alveolar deflation, with some re-expansion of left lung.

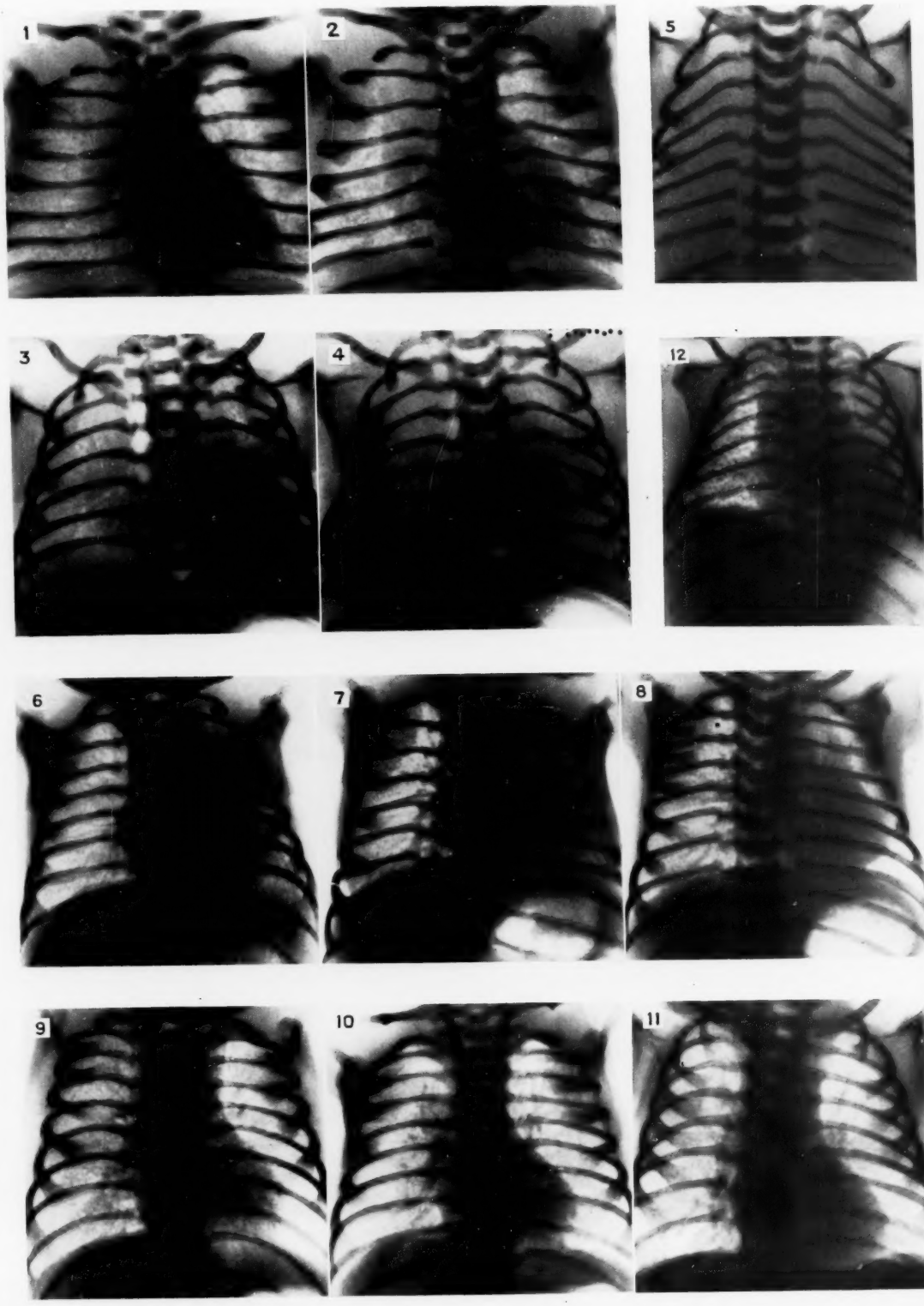
Fig. 9 (case 23)—Aged $1^1/_2$ hours. Well-marked diffuse mottling throughout lung fields.

Fig. 10 (case 23)—Aged 4 days. Mottling still present but coarser and in patches rather confluent.

Fig. 11 (case 23)—Aged 19 days. Clearance of radiological changes.

Fig. 12 (case 24)—Post mortem. Fine mottling throughout lungs, with collapse of left lower lobe.

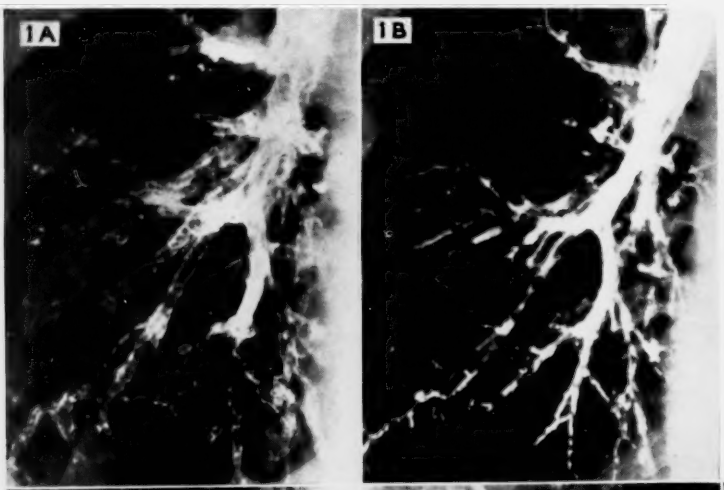
MR. DONALD AND DR. STEINER: HYALINE MEMBRANE

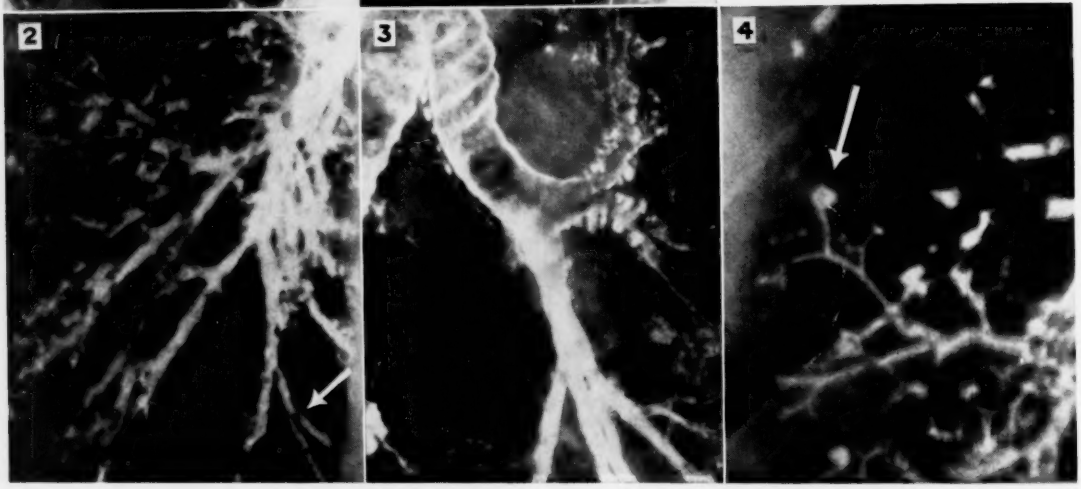


DRS. BERENBAUM AND BIRCH: THORIUM IN LIVER

DR. RONALD: CAISSON DISEASE

DRS. SIMON AND GALBRAITH: CHRONIC BRONCHITIS





mottling throughout both lung fields, and the bronchial tree was not outlined as described in earlier cases. At necropsy pulmonary expansion was moderate and both lungs floated. Microscopy revealed no hyaline membrane. Death was attributed to pneumonic consolidation.

When hyaline membrane is present, collapse seems to progress from alveolar to lobar. In hyaline-membrane disease we have not so far seen this progression reversed, whereas in this instance pneumonia or primary atelectasis progressed from lobar to alveolar collapse and consolidation. The radiological sequence therefore appears to be important in the differentiation of the two conditions.

Case 26.—Forceps delivery at 34 weeks for maternal eclampsia at full dilatation. First of twins. Birth weight 3 lb. 3 oz. Shocked at birth. Respirations shallow, with infrequent gasps. Augmented respiration applied. Died at 13 hours.

Radiography immediately after death showed very poor aeration on both sides. No mottling was visible, nor was the bronchial tree outlined, and we are inclined to regard this as a case of primary atelectasis. At necropsy all the lobes floated. Microscopy revealed overdistended alveolar ducts and widespread areas of atelectasis, but no hyaline membrane. Death was due to a large intraventricular hæmorrhage.

Case 27.—Rapid delivery after antepartum hæmorrhage at 30 weeks. Birth weight 2 lb. 9 oz. Recession developed and cyanosis deepened within an hour, whereupon respiration was augmented intermittently.

Radiography at 2 hours showed fairly good expansion of the right lung, but the left lower lobe was somewhat collapsed. Fine mottling was visible throughout the lung fields. Although the signs of recession had largely disappeared by $5^3/_4$ hours, further radiography at this time showed the mottling to persist, but the left lower lobe appeared better expanded. Radiography at 29 hours and 48 hours showed further improvement. Nevertheless the child died at $4^1/_2$ days, and at necropsy the immediate cause of death was not determinable. All lobes floated, but there was some patchy emphysema. No hyaline membrane.

In this case either the radiographs gave a false positive result or hyaline membrane was in fact present but resolved before death.

Case 28.—Delivered at 32 weeks. Birth weight 2 lb. 12 oz. Admitted aged 1 hour. Very little air entry could be detected, and recession was pronounced. Radiographs taken at 9 hours, 29 hours, and immediately after death showed good expansion, but the first film showed some very fine mottling. At necropsy all the lobes floated, but the lower lobes were poorly aerated. Partial atelectasis was general, but there was no hyaline membrane. Death was due to bilateral intraventricular hæmorrhage.

The radiological appearances in this case were not well marked but might be classed as equivocal.

LEGENDS TO ILLUSTRATIONS ON PLATE

DRS. BERENBAUM AND BIRCH

Fig. I—Reticular distribution of radio-opaque substance in liver and spleen.

DRS. SIMON AND GALBRAITH

Fig. IA (man aged 43)—Bronchogram of right lung during full inspiration.

Fig. IB (same patient)—Full expiration, showing change in calibre.

Fig. 2 (woman aged 50)—Bronchogram of right lung: arrow points to narrow area with dilatation beyond.

Fig. 3 (man aged 50)—Bronchogram of left lung, showing diverticulosis of left main and upper-lobe bronchi.

Fig. 4 (man aged 49)—Bronchogram of right lung: arrow points to berry-like opacity ("peripheral pooling").

DR. RONALD

Fig. I—Right humerus, showing extensive necrosis with irregular bone regeneration, cyst formation, and calcification.

Fig. 2—Left tibia, showing the formation of an "encapsulated" infarct by the marginal calcification.

Discussion

Different kinds of radiographic shadows are sometimes visible when hyaline membrane is present. They represent a type of atelectasis associated therewith; they are not specific of the lesion but tend to follow a definite sequence. Three main types can be distinguished, all of which may be present at the same time, or they may follow in quick succession in hours or days.

At first, fine miliary mottling more or less uniformly distributed throughout the lung fields is noticeable. It appears within a few hours of birth and is probably due to diffuse alveolar collapse and alveolar consolidation. Caffey (1945) described a similar appearance and claimed that this was a physiological phenomenon in premature babies and represented small areas of atelectasis which called for no treatment and resolved within days or weeks. He ascribed it to structural immaturity of the alveolar buds, citing Farber and Wilson (1933). We submit that these appearances are not physiological, and we have traced their development in patients in whom hyaline membrane has been found at necropsy. This mottling is not an attribute of prematurity per se, because clear lung fields are often demonstrable in unaffected premature infants. If the clinical course is progressive and downhill, this fine mottling becomes coarse and tends to coalesce. Ultimately the shadows become confluent, until definite lobar or lobular consolidation and collapse are recognisable. If, on the other hand, the condition improves, the initial mottling slowly resolves and ultimately the lung fields become clear. In some instances all three shadows—miliary mottling, coarse mottling, and consolidation and collapse—are present in the same lung.

Donald and Lord (1953) illustrated radiological changes of the above description without specifying at the time the radiological sequence of events and the diagnostic significance of these findings. Meschan et al. (1953) have described a further case and recommend an extended study.

Once the coarse mottling has developed and areas of consolidation and collapse have appeared, the bronchial tree can at times be clearly seen, outlined into its minor divisions, particularly in the mid and lower zones. This outlining of the bronchial tree is not found in primary atelectasis, when the lungs are totally opaque and only the trachea may be visible.

The sequence of miliary mottling, coarse mottling, and lobar consolidation and collapse, seems to be found only when hyaline membrane is present. The reverse sequence, of pulmonary collapse and subsequent resolution, we have seen in pulmonary infection and in some cases of primary atelectasis.

Summary

The assistance which radiology has to offer in the assessment of atelectasis of the newborn and the diagnosis of hyaline membrane during life is discussed.

Twenty-eight cases are described, from a study of which it appears that not only may diagnosis be clarified but also three distinct radiological patterns are discernible according to the stage of development of hyaline membrane.

The necropsy studies were made mainly by Dr. A. E. Claireaux, and we are indebted to him for his expert help. Our thanks are due to Prof. A. Moncrieff for his continuing support, and to members of the radiographic staff who have coöperated at all hours of the night. This research is being assisted by a Leverhulme scholarship awarded to one of us (I. D.) by the Royal College of Obstetricians and Gynæcologists.

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RADIOLOGY OF CHRONIC BRONCHITIS

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With illustrations on plate

As part of a clinical investigation of a large series of patients with chronic bronchitis (Oswald et al. 1953), standard postero-anterior chest radiographs of each patient were taken in suspended full inspiration. The films of 857 of these patients have been studied with a view to determining whether there are any characteristic radiological features of chronic bronchitis, and whether there is any correlation between the clinical severity of the bronchitis and the presence or absence of any of the radiological signs commonly regarded as indicating emphysema.

Bronchograms done in a representative group of 90 patients have also been studied.

Review of Standard Chest Radiographs

Each radiograph was assessed by a radiologist (G. S.) who knew that the patients were suffering from chronic bronchitis, and (when he asked) was informed of their age and blood-pressure readings. At the time of the assessment, he had no other clinical information.

APPEARANCES SUGGESTING EMPHYSEMA

The criteria used for making a radiological diagnosis of emphysema were:

(1) *A low flat diaphragm.*—Owing to the film shortage at the time of these observations, only a single radiograph was taken in each case; hence the range of diaphragmatic movement could not be assessed.

(2) *A narrow vertical heart with a prominence of the left border* just below the aortic knuckle, suggesting enlargement of the main pulmonary artery.

(3) *An abnormal vascular pattern*—i.e., clear prominent vessels in the region of the hila, which narrowed considerably after the early branchings in the lung fields. These vessels were not only unduly narrow but appeared, as they proceeded distally, to be reduced in number compared with those seen in radiographs of normal persons, and they tended therefore to be abnormally widely spaced.

(4) *Bullous changes.*—A bulla was held to be present when a localised translucent area 1–10 cm. in diameter, with a white hair-line margin, was seen; and a bullous area was presumed when a poorly demarcated hypertranslucent area was seen without vascular shadows, or with a few apparently greatly narrowed vascular shadows within it.

A radiological diagnosis of emphysema was made when all four signs were present, and occasionally when only the last three, including definite bullæ, were seen. These criteria were satisfied in 128 (15%) of the whole series.

Excessive visibility of large pulmonary vessels in the middle of the lung fields was not regarded as a sign of emphysema; nor was hypertranslucency of the whole or a part of the lung fields regarded as reliable evidence in the absence of the other criteria mentioned above. The shape of the thoracic cage and calcification of the costal cartilages were ignored as factors in the diagnosis; in fact excessive calcification of the costal cartilages was noted with no greater frequency in those patients considered to have radiological emphysema than in the rest of the series.

The patients who were thought not to have undoubted radiological evidence of emphysema could be subdivided into those with only some of the radiological features of emphysema and those with none (table I).

As part of the clinical investigation, these patients had been classified into six grades according to their exercise tolerance; those in grade 0 had no dyspnœa; grades 1, 2, and 3 had increasingly severe exertional dyspnœa; patients in grade 4 were incapacitated by dyspnœa on the slightest exertion; and those in grade 5 were dyspnœic at rest. The radiological appearances are compared with the exertional capacities of the patients in table II, which shows a direct correlation between the degree of dyspnœa and the frequency of the radiological demonstration of appearances suggesting emphysema. The presence of only some of the radiological signs suggestive of emphysema does not seem to have any close relation to the exercise tolerance, which confirms the belief of Knott and Christie (1951) that most of the radiological signs said commonly to be associated with emphysema "if taken alone, are of doubtful diagnostic significance."

In some patients dyspnœa may have been due more to bronchospasm than to emphysema, and this may account for the comparative infrequency with which a radiological diagnosis of emphysema was made in the incapacitated patients. Another probable explanation is the conservative manner in which the radiological appearances were assessed, the criteria described above being strictly adhered to. It is also possible that small emphysematous spaces, which often involve only primary or secondary lobules (Reid 1953), may be invisible on a radiograph, even if collectively they occupy a considerable volume.

TABLE I—INCIDENCE OF RADIOLOGICAL FEATURES SUGGESTING EMPHYSEMA IN 857 PATIENTS WITH CHRONIC BRONCHITIS

—	No. of patients
Undoubted radiological evidence of emphysema	128 (*15%*)
Some radiological features only, insufficient to justify a diagnosis of emphysema	320 (*37%*)
No radiological features of emphysema	409 (*48%*)

OTHER RADIOLOGICAL ABNORMALITIES

Table III shows that in this group of patients with chronic bronchitis radiological changes other than those suggestive of emphysema were rare.

The term "inactive pulmonary tuberculosis" is used to signify small circumscribed dense or calcified shadows confined to a small part of the lung, usually in the upper zones.

The commonest pleural abnormality was "thickening," often with an overlying rib-resection denoting a past empyema. The high incidence of pleural abnormalities may be related to the large number of chronic bronchitics whose symptoms date from an acute pulmonary infection and to the frequency with which pneumonia complicates chronic bronchitis. In 7 of the 11 patients with segmental or patchy consolidation there was no obvious constitutional upset and the radiological opacities disappeared within a few weeks; these patients (0·9% of the whole series) presumably had localised aspiration pneumonia of the type described by Scadding (1951).

The radiographs of the two patients with spontaneous pneumothorax, which had caused no symptoms in either case, showed generalised emphysema.

NORMAL RADIOGRAPHS

Of the whole group of 857 radiographs 354 (41%) were considered to show no abnormality in the lung fields.

Bronchographic Appearances

Bronchograms were done in 90 patients who formed a representative group of chronic bronchitics. Fewer old

TABLE II—COMPARISON OF RADIOLOGICAL APPEARANCES WITH SEVERITY OF DYSPNŒA IN 857 PATIENTS WITH CHRONIC BRONCHITIS

(Incidence of radiological appearances in each clinical grade is expressed as percentage)

—	104 patients with no dyspnœa (grade 0)	304 patients with dyspnœa on heavy work (grade 1)	248 patients with dyspnœa on hurrying (grade 2)	154 patients with dyspnœa on walking (grade 3)	47 patients incapacitated by dyspnœa (grades 4 and 5)
Radiological emphysema ..	5	7	20	25	26
Some radiological features of emphysema ..	37	38	34	44	32
No radiological features of emphysema ..	58	55	46	31	42

patients were examined by bronchography than by standard chest radiography, but the distribution of clinical severity and the sex-incidence were comparable in the two groups.

VARIATION OF BRONCHIAL CALIBRE

Normally on respiration the bronchi vary in calibre, becoming wider on inspiration and narrower on expiration. In 77 of the bronchograms films were taken in suspended full inspiration and expiration to demonstrate the range of variation. In 2 bronchograms, both of men with incapacitating chronic bronchitis, generalised excessive inspiratory dilatation was seen, the expiratory bronchial calibre being normal. In bronchograms of 21 other patients similar excessive variation in calibre was seen involving only a part—usually one or more segmental branches—of the bronchial tree (figs. 1A and B).

Our experience of the bronchographic appearances on inspiration and expiration in normal people is inadequate, as are the published references to this subject; but usually, even with the maximal respiratory movements, the variation is slight and the inspiratory calibre of a medium-sized bronchus does not exceed one and a half times the calibre on expiration. In these chronic bronchitics considered to show excessive variation the inspiratory calibre was usually at least twice the expiratory calibre, but admittedly accurate measurements are not possible. Chronic bronchitics, especially those with much dyspnœa, are not good subjects for bronchography, and under these conditions it was often difficult to obtain satisfactory respiratory excursions; had this not been so, a higher incidence of excessive variation in bronchial calibre might have been observed and also a more widespread distribution of such changes throughout the bronchial tree.

TABLE III—INCIDENCE OF RADIOLOGICAL ABNORMALITIES OF LUNG FIELDS, EXCEPT THOSE SUGGESTING EMPHYSEMA, IN 857 CHRONIC BRONCHITICS

Radiological abnormality	No. of patients showing abnormality
Inactive pulmonary tuberculosis	61 (7%)
Abnormal pleural shadows	50 (6%)
Honeycomb or "tubular" shadowing	12 (1·4%)
Linear shadows (localised fibrosis)	12 (1·4%)
Segmental or patchy consolidation	11 (1·3%)
Generalised reticulation	4 (0·5%)
Spontaneous pneumothorax	2 (0·2%)

BRONCHIAL DILATATION

In the bronchograms referred to in the last paragraphs the bronchial calibre on expiration was normal; in 19 bronchograms, however, there was local bronchial dilatation which persisted throughout both phases of respiration. In 14 of these patients the appearance of the dilated bronchi was unusual, an irregular beaded appearance being produced by short and usually unequal segments of alternate dilatation and narrowing (fig. 2). This beading was most frequently seen in one or more of the medium-sized bronchi of the lower lobes, and was usually associated with absence of filling of the minor branches of the affected bronchus. The incidence of these lesions bore a closer relation to the duration of the bronchitis than to its severity; from this and from their localisation it seems possible that they result from past minor aspiration pneumonias, being similar to some of the persistent bronchial changes which Morle and Robertson (1953) described as a sequel to such episodes. In 4 patients a local cystic dilatation of one branch of an upper-lobe bronchus was seen, probably representing past tuberculosis. A local dilatation of the left upper lobe and lingular bronchi, which was seen in the films of 2 patients, was unusual in that transverse striations were present, due to ridges in the bronchial lining.

BRONCHIAL DIVERTICULOSIS

The commonest abnormality was diverticulosis of the main or of the lobar bronchi, which was present in 45 (50%) of the bronchograms (fig. 3). These outpouchings of the bronchial lumen were multiple and were usually seen on the inferior surface of the bronchi, especially those of the upper lobes and lingula. They are due to dilatations of the ducts of mucous glands (Reid 1953, Duprez and Mampuys 1953). One of the first accounts of bronchial diverticulosis by Morlock and Pinchin (1933) described in the same chronic bronchitic "dilatation of the trachea and the whole bronchial tree" with "irregularity of the smaller bronchi . . . shown by beading." Bronchial diverticulosis occurs rarely, if at all, in bronchograms of normal people, and, if seen diffusely in bronchiectatic patients, it probably signifies a coincident generalised bronchitis.

BRONCHOGRAPHIC EVIDENCE OF EMPHYSEMA

In only 1 patient had the iodised oil entered an emphysematous bulla, but in 11 patients the bronchial pattern was distorted by bullæ. A common appearance, which seems to bear a direct relation to other radiological evidence of emphysema, was the termination of the iodised-oil pattern peripherally in small berry-like opacities about 1–3 mm. in diameter, for which the name "peripheral pooling" is suggested (fig. 4). Peripheral pooling was seen in 14 (67%) of the 21 bronchograms of patients whose standard radiographs suggested emphysema, and in only 12 (17%) of the 69 other bronchograms. Absence of filling of the small peripheral bronchi was noted in many of the bronchograms, often distal to bronchi showing beading or distal to otherwise normal bronchi at the bases, which are the parts of the lungs where filling with iodised oil is usually most adequate. In most cases this appearance was probably due to disease in the bronchioles; but, as such absence of filling may be due to technical failure, no accurate estimate of its incidence is possible.

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Generalised narrowing, usually only apparent distal to the third or fourth generation of bronchi, was noted in 4 bronchograms; in none of these patients was bronchospasm severe. A similar appearance is seen occasionally in normal people, and its clinical significance is uncertain.

TABLE IV—INCIDENCE OF PRINCIPAL BRONCHOGRAPHIC ABNORMALITIES IN 90 CHRONIC BRONCHITICS COMPARED WITH SEVERITY OF DYSPNŒA

(Expressed as percentages of patients in each clinical grade showing abnormality)

Clinical grade	Excessive variation of calibre	Diverticulosis	Localised bronchial dilatation	Peripheral pooling
15 patients with no dyspnœa (grade 0)	23	33	13	20
63 patients with dyspnœa on exertion (grades 1, 2, and 3)	31	52	19	29
12 patients incapacitated by dyspnœa (grades 4 and 5)	33	58	42	42

INCIDENCE OF BRONCHOGRAPHIC ABNORMALITIES

Table IV compares the incidence of the principal bronchographic abnormalities in the three clinical grades of dyspnœa. In each case the incidence rises as the degree of dyspnœa increases. 71 patients (79%) had some bronchographic abnormality, and in many, especially those more severely affected, more than one abnormality was present.

Discussion

Chest radiographs are essential in the diagnosis of chronic bronchitis, because patients with other serious chest diseases often present with symptoms of this condition. Once the clinical diagnosis of chronic bronchitis has been established, the value of chest radiography is less certain. This study of single standard chest radiographs shows that, except for occasional minor changes, the only abnormalities are those which are commonly regarded as indicating emphysema. The difficulties of the radiological diagnosis of this condition have been discussed by Knott and Christie (1951). In this survey we have insisted on three particular radiological signs—a fourth being often present in addition—before a radiological diagnosis of emphysema was made. According to these criteria a direct correlation between the degree of dyspnœa and the frequency of the radiological diagnosis of emphysema has been found. This suggests that the strict application of these criteria may be of value in the diagnosis of emphysema.

Although in chronic bronchitis abnormalities are seen more frequently on bronchograms than on standard chest radiographs, bronchography is of less clinical value. Lesions such as gross bronchiectasis and, more rarely, bronchial carcinoma can be excluded, and some estimate can be made of the degree of permanent damage present; this may be of importance if the surgical treatment of emphysema is further explored. The bronchographic findings do not provide much help towards the understanding of the increased sensitivity of the bronchial tree in chronic bronchitis or of the causes of the disabling dyspnœa. Reid has emphasised that the irreversible pathological changes which take place in advanced stages of chronic bronchitis affect chiefly the peripheral parts of the bronchial tree. Her work confirms the important pathological significance of our bronchographic findings, the most remarkable of which are the "peripheral pooling" and the distortion and poor filling of the small peripheral bronchi and bronchioles.

Summary

Standard chest radiographs of 857 patients with chronic bronchitis were examined.

128 patients (15%) had radiographic changes suggestive of emphysema, the occurrence of such changes being directly related to the degree of dyspnœa. Radiological evidence of emphysema was seen in only 26% of the patients who were incapacitated by dyspnœa. The criteria used to make a diagnosis of emphysema were a low flat diaphragm, a narrow vertical heart with prominence of the pulmonary artery, an abnormal pulmonary vascular pattern, and evidence of bullæ.

In 320 patients (37%) some of the radiological abnormalities associated with emphysema were noted, but the appearances were not thought to be sufficient to justify a radiological diagnosis of emphysema.

No other appearances which might be characteristic of chronic bronchitis were found, and in 354 (41%) of the films there were no abnormalities in the lung fields.

Bronchograms of 90 patients with chronic bronchitis were examined, of which 79% showed some abnormality. The principal abnormalities were excessive variation of the bronchial calibre on respiration, localised beaded bronchial dilatation, bronchial diverticulosis, "peripheral pooling," and poor filling of the smaller bronchi and bronchioles.

The value of standard chest radiographs and bronchograms in the diagnosis and assessment of patients with chronic bronchitis is discussed.

We wish to thank Dr. Neville Oswald for the opportunity of studying the radiographs of patients with chronic bronchitis seen in his clinics at Brompton and St. Bartholomew's Hospitals.

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THORIUM DEPOSITS IN THE LIVER
DEMONSTRATED DURING LIFE

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With illustration on plate

THE fact that a thorium sol injected into an animal made the liver and spleen opaque to X rays was first discovered by chance in 1929 by a Japanese worker, Oka (1930). Radt (1930) prepared a thorium dioxide sol which became available for clinical use under the name 'Thorotrast.' It is a suspension of thorium dioxide (about 200 mg. per ml.) with an average particle size of 3–10 mμ. Reports were published on its use for hepatolienography, retrograde pyelography, and arteriography.

Thorium in the Body

Intravenously injected thorium dioxide is taken up by the reticulo-endothelial system and slowly excreted by the kidneys. Thorium salts may also be excreted in the bile (Salerno and Mattis 1951).

Thorium and its decay products are radioactive and emit alpha and beta particles and gamma rays. These emissions damage living tissues by producing ionisation in their path (Zirkle 1936, Lea 1947). From the following table (adapted from Zirkle 1933) it is seen that, for practical purposes, and so far as internally deposited radioactive substances are concerned, only alpha particles need be considered:

	Range in tissues	*Track in tissues* (ion pairs per cm.)
Alpha particles ..	30–50 μ.	.. 40,000,000
Beta particles ..	0·5–5·0 mm.	.. 60,000
Gamma rays ..	Comparable to X rays	.. 150,000

The metabolism of injected thorium is complicated by the fact that its decay products differ from it chemically.

Mesothorium 1 and thorium X are isotopic with radium and, like it, are deposited mainly in the inorganic hydroxyapatite lattice of bone, or tend to migrate there if formed elsewhere. Thoron is a gas and enters the blood. About 0·1% is excreted by the lungs, the rest disintegrating rapidly to thorium A before this can happen (Aub et al. 1952). However, most of the alpha particles are released, and most of the damage is done, in the liver, spleen, and bone-marrow.

The biological effects of radiation include severe or lethal biochemical disorder, inheritable change, and neoplasia (Duggar 1936, Lea 1947, Bloom 1948, Tansley et al. 1948, Dale 1951). Nevertheless thorium compounds, despite warnings about their radioactivity (*Journal of the American Medical Association* 1937, Taft 1937a), have been used diagnostically for many years. Whitaker et al. (1933) limited its use to moribund patients and to those where the risks were overshadowed by its value in diagnosis. They demonstrated thorotrast granules in the Kupffer cells and in scattered granules between the parenchymal cells: the long-term effects were not studied. Willis (1948) said:

"While no tumours following the use of thorotrast in man have yet been reported, the risk that such may appear during the next decade or so when due time has elapsed following the use of this relatively recent method of diagnosis must be recognised."

Selbie (1938) found that 40% of rats injected with thorotrast developed sarcomata. Thomas et al. (1951), reviewing the literature and addressing a questionary to 167 radiologists, were able to describe only 5 instances of malignant growths following the injection of thorotrast; they concluded that this did not indicate a carcinogenetic effect in man, but they thought that fibrosis in the liver and spleen and at the site of an extravascular injection was a risk which made the use of thorotrast unjustifiable. They do not give details of 3 cases (2 of liver tumour and 1 of leukæmia), but the other 2 can be summarised as follows:

A woman, aged 40, was given intravenous thorotrast 75 ml. for investigation of a lump in the liver diagnosed later as a gumma (MacMahon et al. 1947). For twelve years she remained normal. When she died at the age of 70 she was found to have a hæmorrhagic primary endothelial-celled sarcoma of the liver. This arose in relation to the largest deposit of thorotrast in the body. Many of the tumour cells contained thorotrast.

(A similar appearance was noted by Rigler et al. (1935) in a person with a primary liver tumour who was given an injection of thorotrast.)

A man, aged 48, had retrograde pyelography done with thorotrast 30 ml. Sixteen years later a spindle-celled sarcoma of the kidney was found at operation. There was a massive deposit of thorotrast next to the tumour.

This is a rare renal tumour, but the usual one found in animals after the injection of thorotrast. It was therefore felt that thorotrast had caused the growth in this case (Zollinger 1949).

Abrahamson et al. (1950) reported the case of a patient who died with bilateral alveolar-celled carcinoma of the lungs sixteen years after an injection of thorotrast 75 ml. The liver and spleen contained thorotrast, but thorotrast was not demonstrated in the lungs, which were not radioactive, and we do not think a causal relationship has been shown between the thorotrast and the carcinoma.

Spier et al. (1947) reported a case of aplastic anæmia following intravenous administration of an unknown dose of thorotrast nine years previously. At necropsy the marrow showed aplasia and deposits of thorotrast. Thorium dioxide constituted 5% by weight of the marrow. Since the active marrow of an adult weighs about 700 g. (Wintrobe 1951), this implies the presence in the marrow of 35 g. of thorium dioxide and an initial injection of at least 175 ml. of thorotrast. However, irregularity of deposition may explain the high concentration of thorium in the sample of marrow examined. Sections of the liver from this case were examined by Yagoda (1949) by autoradiography. Calculations based on these studies showed focal concentrations of 3% of thorium dioxide.

Schmidt et al. (1950) mention a patient who had an unstated amount of thorotrast injected for cerebral arteriography and ten years later developed aplastic anæmia. Deposits were shown radiographically in the marrow, spleen, and lymph-nodes, but their radioactivity was not demonstrated.

The presence of radioactive substances in a living person may be shown by detecting radioactive gases (radon or thoron) in the breath (Martland et al. 1925), thorium X in the fæces, or gamma rays emitted from the body (Taft 1937b). A full account of the elaborate methods used is given by Aub et al. (1952). Autoradiography, however, is a method practicable in any pathology laboratory by means of which radioactive deposits may be demonstrated in tissues obtained by biopsy or necropsy.

In the following case the diagnosis was confirmed during life.

Case-history

A bachelor, aged 52, was first seen in November, 1952. Twenty-three years previously thorotrast (probably 10 ml.) had been injected into the arteries of the right leg in the investigation of some arterial disease for which the leg was later amputated. He remained well and active after this, apart from bouts of "indigestion"—i.e., attacks of upper abdominal pain which, he thought, followed emotional upsets.

On examination the liver edge was just palpable, but the spleen could not be felt. All the investigations made were negative, except that films taken during cholecystography (which was normal) showed the liver and spleen to be full of a fine dense radio-opaque substance giving a fine reticular appearance (fig. 1). Radiography of the skeleton showed no abnormalities.

HISTOLOGICAL FINDINGS

Needle-biopsy of the liver was performed, the aspirated tissue being fixed in formalin and embedded in paraffin-wax. Sections showed liver of normal architecture but containing scattered deposits (about 20 in an area of 2·5 sq. mm.). Most of the deposits filled the cytoplasm of what appeared to be groups of 10–20 parenchymal cells; but possibly these were clusters of swollen Kupffer cells (fig. 2). Occasional deposits filled single parenchymal cells or Kupffer cells. Considerable amounts lay in the portal-tract connective tissue, which was fibrotic. Small deposits lay freely between liver cells or in sinusoids, although this appearance may have been due to material shifted by the microtome knife. The deposits were sharply outlined, finely granular, greyish, translucent, and refractile. A few tiny granules were scattered throughout the tissues without forming discrete masses. There was neither excessive cellular infiltration nor architectural disorganisation, but all the nuclei of the parenchymal cells showed an

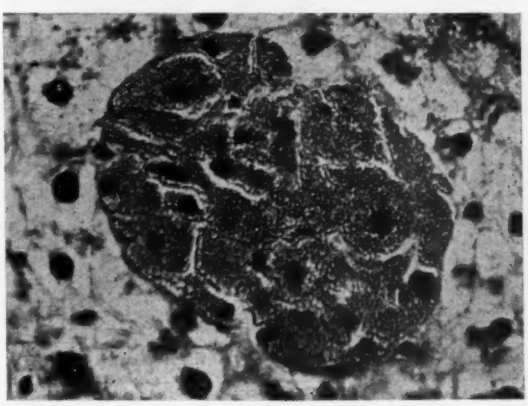
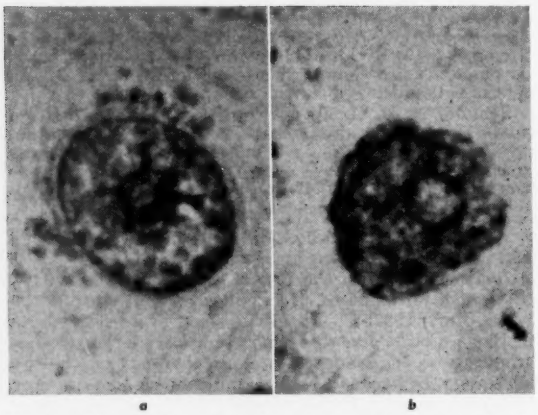


Fig. 2—Deposit of thorium dioxide in liver cells. (Saffranine. × 1236.)



a *b*

Fig. 3—*a*, Normal liver-cell nucleus showing stringy chromatin in colourless nucleus sap and bounded by well-demarcated nuclear membrane; *b*, abnormal liver-cell nucleus containing granular chromatin and bounded by abnormally thin nuclear membrane. (Feulgen. × 8000.)

abnormality which may be significant. The normal liver-cell nucleus shows a sharply defined varicose chromatin network suspended in a colourless nuclear sap (fig. 3*a*). The nucleolus is generally surrounded by a conspicuous condensation of chromatin, the "nucleolar-associated chromatin," said to be concerned with the synthesis of protein (Thorell 1947, Caspersson 1947). In the present case the nuclei were uniformly filled with a fine peppery granular chromatin (fig. 3*b*). The nucleolar-associated chromatin was generally diminished in amount. The nuclear membrane was abnormally thin.

On the whole, the nuclei were slightly smaller than normal, particularly those of the cells containing deposits; but it is difficult to be certain of this in routinely processed material. Though these changes could be appreciated with any nuclear stain, they were best shown by the Feulgen technique (fig. 3). No mitotic figures or cytoplasmic abnormalities were seen.

We have not seen such a strikingly uniform abnormality in any of the numerous other liver biopsy specimens which we have studied. In particular the nuclei of pyknotic liver cells, which they most resemble, are much more uneven in distribution and show much more irregularity in staining and outline.

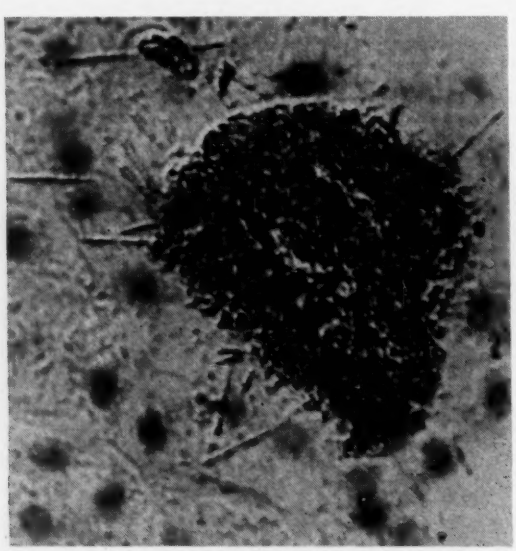


Fig. 4—Autoradiograph of tracks radiating from deposit of thorium dioxide (× 1236).

Abundant glycogen was present, even in cells abutting on those containing deposits, although it could not be demonstrated in these. However, chemically determined glycogen may show a considerable decrease before any is apparent histologically (Morrione and Mamelok 1952).

RADIOACTIVITY

The radioactivity of these deposits was demonstrated by using alpha-track plates, in which the ionisation produced by the passage of an alpha particle reduces the silver bromide, rendering the track visible after development of the plate. (For a full discussion see Yagoda 1949, Doniach and Pelc 1950, Heller 1951.) The technique of Endicott and Yagoda (1947) was followed.

Paraffin sections 3 μ thick were mounted on the emulsion, and the plates were stored for twenty days. The wax was then removed, the plates were developed, and the sections were stained with Meyer's hæmalum and mounted in D.P.X. mounting medium.

A typical result is shown in fig. 4, in which tracks radiating from the deposit are seen in the emulsion. About 100 tracks are seen per section. This represents about half the alpha particles emitted, the other half travelling away from the emulsion.

The amount of thorium in the liver can be crudely calculated, on the assumption that the deposits contain thorium in equilibrium with its decay products, and that the biopsy is a fair sample of the liver, as follows:

Volume of section	= 0·0075 c.mm.
Equivalent volume of unfixed liver	= 0·0125 c.mm. (estimate based on experiments)
∴ Number of sections in a liver 1500 c.cm. in volume	= $1{\cdot}20 \times 10^8$
∴ Number of alpha particles emitted in liver in 20 days	= $2{\cdot}40 \times 10^{10}$
Number of alpha particles emitted by thorium 1 g. in 20 days	= $4{\cdot}34 \times 10^{10}$
∴ Mass of thorium in liver	= 0·55 g.

This is equivalent to thorium dioxide 0·63 g. or thorotrast 3·2 ml.

If the original injection was 10 ml., this indicates that 30% of the total dose remains in the liver at present. Jacobson and Rosenbaum (1938), basing their calculations on gamma-ray measurements, found that 27% of injected thorotrast remained in the liver after five years.

In the present case, therefore, the liver has been shown to contain radioactive deposits, and similar deposits may be presumed to be present in the spleen (which was radio-opaque) and bone-marrow. We cannot say with certainty whether the nuclear changes described represent radiation damage or not.

Bloom (1948) irradiated numerous species of animals with various external and internal sources. He observed clumping of chromatin and increased clarity of nuclear detail. However, his experiments, like many others which have been published, were short-term and involved relatively intense radiation.

Tripoli (1934) observed pyknosis of liver nuclei in animals, but only when ten times the standard dose was given. A photomicrograph of the liver in a case reported by Fleming and Chase (1936) shows increased nuclear basophilia, and a similar photograph in the case reported by Jacobson and Rosenbaum (1938) shows vacuolated nuclei. In neither case does the author comment on these appearances.

In general, the photomicrographs hitherto published of thorotrast deposits in man do not show any details of the nuclei.

Discussion

The dangers of the presence within the body of minute amounts of radioactive matter have often been forcibly demonstrated (Martland 1926, 1929, 1931, Martland et al. 1925). In spite of this it is still the practice of many radiologists to give as much as 75 ml. of thorotrast (Pirkey et al. 1951, Loeb et al. 1952). This dose is equivalent to 1–3 μg. of radium (*Journal of the American Medical Association* 1937). As an illustration of what this amount of radioactive substance may accomplish, the cases of chronic radium and mesothorium poisoning reported by Aub et al. (1952) may be considered:

In their series there were 13 patients with a body content of radioactive material equivalent to 0·5–3·0 μg. of radium.

Of these, 2 were crippled by pathological fractures, and 1 developed a giant-cell tumour of the jaw, 1 an osteogenic sarcoma, and 2 a carcinoma of the nasal sinuses. The carcinomas did not appear until more than thirty years after the initial exposure.

Since thorotrast has been in general use for little more than twenty years, it is not surprising that few deaths attributable to its radioactivity have so far been reported. If a person dies of a malignant tumour, unless adequate histological examination of post-mortem tissues is made, it will not be realised that the growth may be due to a single injection received twenty years previously, and perhaps long forgotten.

There is much to be said for limiting the use of thorotrast to shed light on difficult diagnostic problems in elderly patients, where its use may prevent or expedite a major operation. Pirkey et al. (1951), who adopted these indications, used it only seven times in 100,000 examinations.

Summary

Reports of thorotrast deposits in man mention 7 deaths attributable to the radioactivity of thorium.

The doses of thorotrast commonly used are carcinogenic.

The demonstration of radioactivity in tissues does not require expensive materials, special preparation of the tissue, or elaborate technique. It should be attempted whenever routine histological examination reveals deposits which are possibly thorotrast or other radioactive material.

In this way the difficulty of assessing the true incidence of thorotrast-induced tumours in man might be diminished.

Our thanks are due to Dr. R. H. Herz, of Kodak Research Laboratory, for the alpha-track plates, and to Mr. H. Knight for the photographs.

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ASEPTIC NECROSIS OF BONE IN CAISSON DISEASE

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With illustrations on plate

CAISSON disease, decompression illness, or "the bends" develops when a person who has been working in an atmosphere of compressed air undergoes decompression too rapidly. Excess nitrogen (in the form of bubbles) is released within the body causing tissue damage. Bert in 1880 suggested that this was the mechanism involved, and the work of Boycott, Damant, and Haldane (1908) and Bornstein (1910, 1914) has since confirmed the hypothesis. The clinical features are those of injury, usually transient, to different systems—cerebrospinal (varying from paræsthesiæ to unconsciousness), cardiovascular (embolic), pulmonary (dyspnœa), visceral and urogenital (nausea, vomiting, and pain), dermal (pruritus and lividity), and skeletal (Erdman 1913). Affection of the bones is commonly associated with pain, often so severe as to produce the characteristic distortion of posture from which the name "the bends" originates.

That permanent changes take place in the bones was shown by Bornstein and Plate (1911) and by Bassoe (1911, 1913) independently, when they described the radiological appearances of mottled changes in density in the head of long bones, with flattening of the articular surface, narrowing of cartilage space, and marginal lipping. The changes have since been recognised as those of aseptic bone necrosis (Coley and Moore 1940). The condition is not common, and a case is reported here.

Case-report

A man, aged 62, was admitted to hospital with pain in the chest after a fall; he had also had discomfort in the left wrist. He had been employed in Great Britain as a diver for more than forty years and had worked almost every day up to six hours, wearing a diving-suit into which air was pumped from compressors on the deck above. He had worked at depths of 60–80 ft. He estimated that on the average he had periods of two hours submerged, with short intervals for rest between. In diving he reached 80 ft. in about ten seconds; coming up, he stopped at 40 ft. for ten minutes, 30 ft. for ten minutes, and 10 ft. for fifteen minutes to decompress before surfacing.

History of Bends

He had had "the bends" more or less constantly, and at least once a week had a severe attack, usually on a Monday. The attacks were of two kinds—"bad" and mild. The bad type came on if he had been working deeper than 50 ft. When he came into the fresh air he would develop a sick feeling in the abdomen, his face became greyish-yellow, and he had vague general pains followed by sudden agonising pains in the joints—e.g., shoulder and knee. These pains were severe for an hour or two and gradually passed off in five or six hours. When they were exceptionally severe a local anæsthetic injected into the skin over the joints gave some relief. After the pains had disappeared, the limbs were relatively anæsthetic, and for some hours there might be some incoördination of walking. In the mild type of attack, which he called "skin" or "plum-pudding" bends, his whole body became blue-white and intensely itchy. This was rapidly relieved by a very hot bath. He could feel air-bubbles under his skin. This lasted about twenty-four hours, and he could hardly bear to have his skin touched, because it was tender as well as itchy. His trunk was particularly affected.

During his work he was usually examined medically once a year, and he had worked considerably later in life than the average diver, who usually gives up this work about the age of 50.

Investigations

He was a well-built man showing no evidence of distress, and general clinical examination revealed no abnormality in the vascular, nervous, or other systems.

A *blood-count* showed red cells 5,220,000 per c.mm., Hb 100%, white cells 7500 per c.mm., polymorphs 57%, lymphocytes 31%, monocytes 7%, eosinophils 5%, erythrocyte-sedimentation rate 8 mm. in 1 hour (Westergren); Wassermann reaction negative.

The *urine* contained no abnormal constituents and no excess of calcium (Sulkowitch test).

An *electrocardiogram* was within normal limits.

Radiography showed no abnormality of the heart or of the lungs, but it showed intramedullary calcification of the lower end of each femur, the upper end of each tibia, and the upper end of each humerus. The calcification started from the region of the epiphyseal line, extending thence into the shaft of the bone. The cortex was not involved, and the bone was not expanded (figs. 1 and 2).

Biochemical findings.—Serum-calcium 10 mg., serum-phosphorus 4·5 mg., serum alkaline phosphatase 4·2 units, serum acid phosphatase 2·0 units, and blood-cholesterol 118 mg. per 100 ml., calcium balance normal.

Discussion

Aseptic necrosis of bone does not necessarily give rise to symptoms unless it involves the articular surface of a joint. Its primary cause is interruption of the blood-supply, with subsequent death of bone. It can be produced experimentally by the injection of irritants (Bancroft 1922), by mechanical blockage of vessels, e.g., with charcoal solution (Kistler 1934), by periosteal stripping (Brunschwig 1930), and by air embolism (Colonna and Jones 1948). Its production in caisson disease is perhaps slightly more complex than at first appears.

When the body is subjected to compressed air, the fats and lipoids absorb five times as much nitrogen as do the non-fatty tissues. The main deposits of fat are in the abdomen, central nervous system, and long bones. The bone-marrow and spinal cord are, in relation to the nitrogen content, the tissues with poorest blood-supply, and they are enclosed in bone, which prevents the diffusion of nitrogen into the adjacent tissues. If decompression takes place too suddenly, nitrogen is released in excess of what can be excreted by the lungs. Nitrogen stasis occurs, with the formation of bubbles in the blood and tissues, particularly where the saturation is high or the blood-flow slow—the sites already mentioned. The cortex of the bones is spared by virtue of its rich blood-supply, and the lesions are usually confined to the diaphyses, but metaphyseal and articular lesions can occur. The location and severity of symptoms depend on the site affected and the volume of gas released.

The gas-bubbles have a mechanical action in both intravascular and extravascular sites in blocking the blood-flow. Furthermore, compression tends to increase the intravascular agglutination of erythrocytes (James 1945), and this agglutination is intensified as the carbon-dioxide tension increases (Swindle 1937). The obstruction of the blood-vessels is completed by their inability to expand against the rigid walls of the bony tube in which they are confined. Consequently infarction of the bone occurs.

The changes which ensue take a considerable time to develop but nevertheless may follow even one faulty decompression. The pathology is that of bone necrosis and infarction. Within the shafts of the bones necrotic areas are found surrounded by a fibrous wall. Calcification and ossification take place, and the place of the dead bone is partly taken by new bone (Kahlstrom et al. 1939, Walker 1940). Radiography reveals an irregular area of increased density usually surrounded by a thin band of calcification. The medulla beyond appears normal. The lesions are multiple and restricted to the long bones.

In the differential diagnosis must be considered chronic sclerosing osteitis (rarely multiple, and usually showing cortical thinning and medullary narrowing), sclerosing osteogenic sarcoma (pain, ill-defined border, and absence of calcified boundary), calcifying enchondroma (multiple, symmetrical, and expansile), syphilitic osteitis (periosteal and serologic reaction), and tuberculosis (laminated new bone).

Treatment is directed towards the prevention of deformity and its correction if necessary. The condition can be prevented by adequate decompression.

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USE OF ETHYLENE DIAMINE TETRA-ACETIC ACID (VERSENE) FOR REMOVING FISSION PRODUCTS FROM THE SKELETON*

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THE presence of minute traces of radium in the skeleton has long been recognised as a serious toxic hazard likely to cause blood dyscrasias and bone tumours (Martland et al. 1925, Aub et al. 1952). Hamilton (1947) has pointed out that a large number of the radioactive products of uranium fission are also selectively retained in the skeleton, while the strontium isotopes are "par excellence producers of bone tumours" (Brues et al. 1946, Brues 1949). The deposition of these radioactive isotopes appears to follow one of two patterns. The deposition of strontium follows the same route as that of calcium (Kidman, Rayner, Tutt, and Vaughan 1952, Jowsey, Rayner, Tutt, and Vaughan 1953). The deposition of yttrium and the rare earths differs from that of strontium in that immediately after injection it is found in certain areas of active growth only (Hamilton 1947, Rayner, Tutt, and Vaughan 1953).

Attempts to increase the normal extremely slow loss of such isotopes from bone proved disappointing (Vaughan, Tutt, and Kidman 1952) until an increased urinary excretion of yttrium in rats was reported (Foreman and Hamilton 1951, Cohn et al. 1953) following the administration of calcium and sodium salts of ethylene diamine tetra acetic acid (versene or E.D.T.A.). Ethylene diamine tetra acetic acid is a chelating agent which has marked ability to form soluble complexes with cations in solution. Chelation occurs most readily with certain metals such as copper and lead and the rare earths. On theoretical grounds it should form a chelate with yttrium, which is trivalent (Cabell 1952). The alkaline earths, such as

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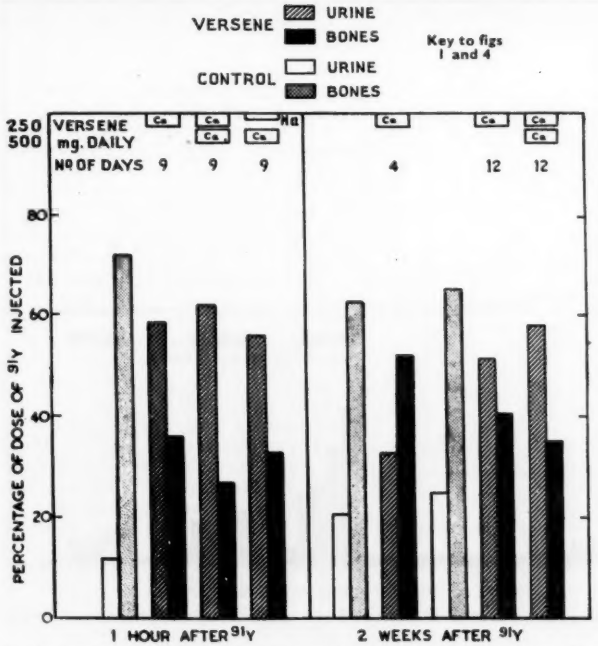

Fig. 1—Excretion and retention of ^{91}Y in rabbits (5–7 weeks old) following daily administration of versene.

calcium, are held less strongly. No chelation occurs with alkali metals. The sodium salt is known to be toxic to animals (Bersworth Chemical Company 1952), though not necessarily to man (Spencer et al. 1952) since chelation occurs with calcium following injection and hypocalcæmia may result. The calcium disodium salt, on the other hand, appears to be non-toxic (Bersworth Chemical Company 1952, Spencer et al. 1952) and is rapidly excreted. Preliminary observations suggest that this salt is of value in treating lead poisoning both in children and adults (Sidbury et al. 1953).

The following report describes experiments on the effectiveness of sodium and calcium ethylene diamine tetra acetic acid in removing ^{90}Sr, ^{90}Y, and ^{91}Y from the skeleton of rabbits.

Experimental Procedure

Rabbits of the same stock as those used in previous experiments (Kidman, Tutt, and Vaughan 1950) were kept in metabolism cages so that urine and fæces could be collected separately. They were aged 5–7 weeks or over 12 months and were given a single intravenous injection of either ^{91}Y or ^{90}Sr–^{90}Y equilibrium mixture (25 μc. per kg.). This was followed by intraperitoneal injections of calcium disodium versenate or trisodium versenate at various intervals. The dose given was an arbitrary one. The young rabbits weighing $0{\cdot}54 \pm 0{\cdot}02$ kg. were given 250 mg. calcium disodium versenate or 120 mg. trisodium versenate once or twice a day. In one instance 30 mg. of trisodium versenate was given an hour before the calcium salt. The older rabbits weighing $2{\cdot}45 \pm 0{\cdot}12$ kg. were given 500–750 mg. calcium disodium versenate once or twice a day. Only one control rabbit given no versenate was included in each group, since the figures both for excretion and retention agreed well with those obtained in earlier experiments (Kidman et al. 1950, Rayner et al. 1953, Jowsey et al. 1953). In one experiment the control was given an intraperitoneal injection of physiological saline twice daily; since no effect on excretion was noted this was not done in other controls.

Estimations of excretion and retention of ^{91}Y and ^{90}Sr–^{90}Y were made as previously described (Kidman et al. 1950, Tutt, Kidman, Rayner, and Vaughan 1952). The amount of ^{91}Y excreted is throughout expressed as the total over the period of examination. Excretion in the fæces was small and unaffected by treatment: it was therefore ignored after the first few experiments. Retention in skin, flesh, and each organ was initially determined separately, but again the amount was so small that it was subsequently also ignored.

Autoradiographs were prepared by methods previously described (Kidman et al. 1952) except that all sections were ground to the same thickness (200 μ) after cutting on the milling machine. and were exposed for the same length of time on standardised X-ray stripping film specially prepared by Kodak Ltd. This standardisation of the technique allows of comparison of intensity of reaction between autoradiographs.

Results

EXCRETION AND RETENTION OF ^{90}Sr–^{90}Y

Sodium versenate given 1 hour after a single injection of ^{90}Sr–^{90}Y equilibrium mixture, and then daily for a total of 9 days.—These rabbits (aged 5–7 weeks) showed no reaction suggestive of tetany, but on some occasions following injection they appeared rather collapsed for a few minutes: weight gain was not impaired. The excretion of ^{90}Sr in the urine of the control animal was 15·6% of the injected dose, compared with 13·2% in the rabbits receiving the versenate. Retention in the

EFFECT OF VERSENATES ON PERCENTAGE EXCRETION AND RETENTION OF ^{90}Sr AND ^{91}Y IN RABBITS

Method of Administration	Young (5–7 weeks)				Old (12 months and over)			
	Control		Versene		Control		Versene	
	Urine	Bone	Urine	Bone	Urine	Bone	Urine	Bone
Na_2 versene 1 hour after ^{90}Sr and daily for 9 days	15·6	50·9	13·2	60·8	..	..	..	..
$CaNa_2$ versene 1 hour after ^{91}Y and daily for 9 days	12·3 ± 0·7	72·9 ± 2·9	58·3 ± 1·2	36·0 ± 1·8	..	..	..	..
Na_2 versene 1 hour after ^{91}Y followed by $CaNa_2$ versene daily for 9 days	12·3 ± 0·7	72·9 ± 2·9	56·2	32·8	..	..	..	..
$CaNa_2$ versene 1 hour after ^{91}Y and twice daily for 9 days	12·3 ± 0·7	72·9 ± 2·9	61·5 ± 2·7	26·6 ± 1·8	28·5	59·5	75·2	24·3
$CaNa_2$ versene 2 weeks after ^{91}Y for 4 days.. ..	20·1	62·7	32·7	52·2	..	..	33·5	48·7
$CaNa_2$ versene 2 weeks after ^{91}Y for 12 days once daily	24·8	65·4	51·7	40·3	..	..	..	..
$CaNa_2$ versene 2 weeks after ^{91}Y for 12 days twice daily	19·0	77·2	58·0	35·2 ± 1·6	37·07	59·3	51·14 ±1·87	47·6 ±3·35

bones of the latter was 60·8%, while in the control it was 50·9%. ^{90}Y excretion was increased by administration of versenate as shown by examination of the restoration of the equilibrium concentration of ^{90}Y in the urine (Kidman et al. 1950, 1951). No quantitative results were obtained, for the counter wore out before its efficiency relative to the isotopes concerned was determined.

EXCRETION AND RETENTION OF ^{91}Y

Rabbits Aged 5–7 Weeks

(*a*) *Calcium disodium versenate given 1 hour after a single injection of ^{91}Y and daily for 9 days.*—The animals excreted a total of 58·3±1·2% of the injected dose while the controls excreted 12·3±0·7%. The bones of the control contained 72·9±2·9%, compared with 36·0±1·8% in the treated animals; retention in the carcase apart from the bones was 8·0% in the control and 2·7±0·2% in treated animals (fig. 1; table). Two animals received daily 30 mg. of sodium versenate, followed an hour later by calcium versenate. The total ^{91}Y excreted was not increased compared with animals receiving calcium versenate alone.

(*b*) *Calcium disodium versenate given 1 hour after a single injection of ^{91}Y and twice daily for 9 days.*—The rabbits showed no toxic reaction and gained weight. The mean total urinary excretion ^{91}Y was 61·5±2·7% compared with 12·3±0·7% in the control. The mean total retention in the skeleton was 26·6±1·8% compared with 72·9±2·9% in the control (table; fig. 1).

Geographical autoradiographs prepared from longitudinal sections of the tibia fibula (fig. 2) show a generalised reduced reaction throughout the whole bone in animals which had received versene compared with the control. The most noticeable difference was in the region of the lower end of the metaphyseal trabeculæ. No reaction was present in the autoradiographs prepared from bones of versene-treated animals, while a heavy reaction was present in the control.

(a) (b)

Fig. 2—Geographical autoradiograph: longitudinal section of tibia of rabbit (5–7 weeks old) killed 9 days after a single injection of ^{91}Y. (a) Control. (b) Given an injection of versene one hour after ^{91}Y and twice daily for 9 days. Note (1) general reduction of reaction; (2) absence of reaction from metaphyseal trabeculæ.

(*c*) *Calcium disodium versenate given 14 days after a single injection of ^{91}Y each day for one period of 4 days. Total period of collection 22 days.*—There was a sharp increase in the daily ^{91}Y excretion in the urine after injection of versenate. A total of 32·7% of the injected dose was excreted by the treated rabbits, compared with 20·1% by the control. The skeletal retention was reduced from 62·7% in the control to 52·2% in treated rabbits (table; fig. 1).

(*d*) *Calcium disodium versenate given 14 days after a single injection of ^{91}Y for a total of 12 days, divided into 4-day periods. Total period of collection 38 days.*—Each collection of urine after versenate injection showed an increased ^{91}Y content. The total amount excreted was smaller in each successive period. The diminished response is only in part due to the decrease in ^{91}Y content of the bone (fig. 3). The total excreted was 51·7% in the treated animals and 24·8% in the control; the total retained in the bone was 40·3% in treated animals and 65·4% in the control (table; fig. 1).

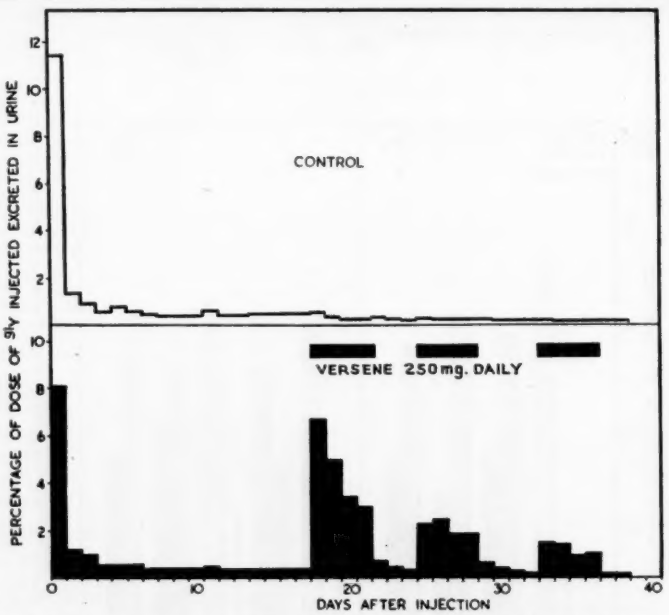

Fig. 3—Average daily excretion of ^{91}Y in rabbits (5–7 weeks old) following injection of versene.

(*e*) *Calcium disodium versenate given 14 days after a single injection of ^{91}Y twice daily for a total of 12 days divided into 4-day periods. Total period of collection 38 days.*—The results were not greatly different from those obtained in the series with single daily injections of versenate, although there was slightly more ^{91}Y in the urine. The total urinary excretion was 58·0% in the treated rabbits and 19·0% in the control. The total skeletal retention was 35·2 ± 1·6% in the treated rabbits and 77·2% in the control (table).

Rabbits Aged 12 Months or Over

(*a*) *Calcium disodium versenate given 1 hour after a single injection of ^{91}Y twice daily for 9 days.*—The mean total urinary excretion by the treated rabbits was 75·2% of the injected dose compared with 28·5% in the control; the skeletal ^{91}Y content was 24·3% in the treated rabbits and 59·5% in the control (table; fig. 4).

(*b*) *Calcium disodium versenate given 14 days after a single injection of ^{91}Y each day for 4 days. Total period of collection 38 days.*—No rabbit was available to serve as a control in this experiment. There was a sudden increase in the urinary ^{91}Y output after injection of versenate, but the increase was much less than in the case of the younger rabbits (fig. 5).

(*c*) *Calcium disodium versenate given 14 days after a single injection of ^{91}Y for a total period of 12 days divided into 4-day periods. Total period of collection 38 days.*—The rabbits treated with versene excreted 51·1 ± 1·87% of the injected dose compared with an excretion of 37·1% by the control; the skeletal content of ^{91}Y was 47·6 ± 3·4% in the treated rabbits and 59·3% in the control (table; fig. 5).

In all animals injected with versene there were adhesions and some inflammation of the abdominal wall. In the animal receiving normal saline no such lesions were seen.

Discussion

The experiments described suggest that calcium disodium versenate is effective in increasing the excretion

of ^{91}Y and ^{90}Y, especially in young rabbits, but is without effect on the excretion of ^{90}Sr. This is not surprising. Calcium excretion is increased by the administration of sodium versenate (Spencer et al. 1952) but the stability constants of the strontium and calcium complexes of versene are not sufficiently different to allow preferential complexing of minute traces of strontium in the presence of considerable quantities of calcium (Cabell 1952).

The effect on yttrium excretion is greater in young than in old animals. The skeletal burden is appreciably reduced in both age-groups if the versene is given immediately after injection of yttrium, but if it is given two weeks later the effect in the older animals is slight. These differences may be explained by assuming that chelation occurs with the yttrium present in the blood-stream immediately after injection or released to the blood-stream by the normal process of resorption. The great reduction of ^{91}Y in the lower end of the metaphyseal trabeculæ of young rabbits treated with versene for 9 days compared with the control suggests that the isotope is removed from areas of high metabolic activity associated with a good blood-supply. In old animals metabolic activity in the bone is slight and little yttrium is released to the blood-stream. The skeletal burden is therefore not appreciably reduced.

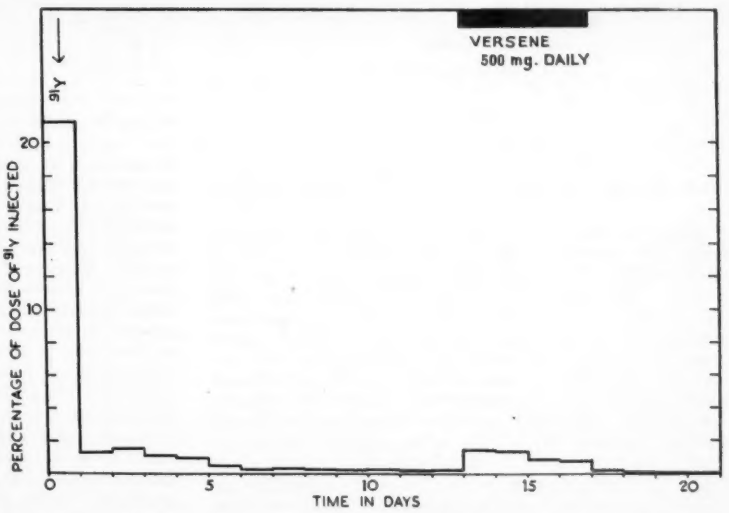

Fig. 5—Average daily excretion of ^{91}Y in urine of rabbits (over 12 months old) following administration of versene.

It is difficult to understand why the administration of two doses instead of one in each 24 hours has little effect upon the total amount of yttrium excreted.

Whatever the mechanism of the increased excretion, it is suggested that the administration of calcium versenate to young people who may inadvertently ingest radioactive yttrium, and possibly the rare earths, offers some hope of reducing the skeletal burden, particularly if given within 24 hours. In man it should probably be given by slow intravenous transfusion (Spencer et al. 1952, Sidbury et al. 1953). The correct dose is still a matter for investigation.†

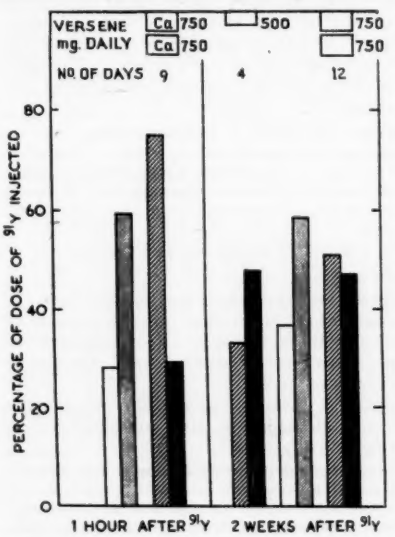

Fig. 4—Excretion and retention of ^{91}Y in rabbits (over 12 months old) following daily administration of versene.

Summary

Experiments are described on the effect of injections of calcium disodium and trisodium ethylene diamine tetra-acetic acid on the excretion of certain bone-seeking radioactive isotopes in rabbits.

The calcium disodium salt appears non-toxic and has a considerable effect on the excretion of radioactive yttrium in both young and old animals if given shortly after injection of the isotope. If given 2 weeks after injection, it reduces the skeletal burden in young rabbits but not appreciably in older animals. It is without effect on the excretion of radioactive strontium.

This chelating agent may well be of therapeutic value in people who ingest certain bone-seeking isotopes.

We should like to express our thanks to Prof. J. H. Burn, F.R.S., whose constant help and encouragement has made this work possible. We are grateful to the Bersworth Chemical Company for a generous gift of calcium versenate. One of us (J. M. V.) has an expenses grant from the Medical Research Council. We are also indebted to the Hæmatological Research Fund endowed by the Nuffield Foundation.

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† Recent experiments have shown that reducing the amount of versene to 120 mg. daily does not reduce excretion; reduction to 64 mg. daily reduces it to a moderate extent.

MALNUTRITION IN THE ELDERLY

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MUCH has been written about the effects of widespread starvation associated with political strife, war, and the great famines due to failures of crops such as are still seen in China and India today. This paper deals with less dramatic circumstances of malnutrition which are not uncommon in general and hospital practice even in these islands, and which mainly affect the elderly.

In the first half of this century nutritional research concerned itself so successfully with infants and children that rickets and infantile scurvy have become almost historic diseases. We intend in this paper to show that there are opportunities for investigation of malnutrition in the aged, and that there may be need for fresh means of solving social and medical problems which are likely to grow in proportion to the ever-increasing span of life.

Diagnostic Criteria

Most of our statements are based on case-histories of patients in a general hospital which admits, mainly, but not exclusively, the aged ill. Only patients who were under the personal supervision of both or either of us have been considered in this review, which comprises 39 patients of both sexes. Only those in whom malnutrition was the primary and main disability were included. In a number of patients we believed that reactivation of fibrotic phthisis, development of non-specific respiratory infections, or urinary sepsis, were in fact secondary to malnutrition. Such cases were, however, not included, neither, of course, were such conditions as pernicious anæmia or malignant disease associated with malnutrition.

In the course of 17 months, from May, 1951, until September, 1952, 1 patient out of 36 non-selected admissions to two medical blocks at Newsham General Hospital suffered from malnutrition. The total number of admissions to these two blocks was 792. The rather high incidence of 2·8% showing malnutrition is explained by the fact that the hospital admits mainly the higher age-groups. No comparable figures are available from other hospitals.

Diagnosis of malnutrition was based on a detailed history supported by interview with relations or friends of the patients in the hospital, and with the help of the hospital almoner in the patient's home; and a clinical examination with full use of radiological and laboratory investigations, and in some cases with consideration of the response to specific remedies like ascorbic acid or high-protein diet.

An effort was made to obtain detailed information about the financial status of the patient and cost of the essential items of the weekly budget with special reference to food costs. Old people almost all suffer from several disabilities, and in that sense malnutrition was rarely the only disorder. Arteriosclerosis, hypertension, emphysema, and arthritis were often associated with it, but had no evident relation to the type of nutritional deficiency, nor did they materially affect any therapeutic measures taken. Many more cases of nutritional deficiency were treated by us than the 39 under review, but investigations before 1951 were often incomplete and it was not until we introduced a special case-record chart for nutritional deficiency that we obtained comparable data.

Age-distribution

There were 18 men and 21 women in our review. Their ages were:

35–40	.. ..	1	65–70	.. ..	3
41–45	.. ..	1	71–75	.. ..	11
46–50	.. ..	2	76–80	.. ..	5
51–55	.. ..	2	81–85	.. ..	6
56–60	.. ..	0	86–90	.. ..	1
61–65	.. ..	7			

The fact that 33 of the 39 patients were over sixty years of age is significant, even in a hospital which concerns itself mainly with the aged. One of us (H. F.) has collected cases of nutritional deficiency in another general hospital of comparable size which admits all age-groups, and he has found the same prevalence of malnutrition in the elderly. Only quite exceptionally was malnutrition, as a primary disorder, found in the middle or young age-groups. The social and economic history of the patients gives the answer to the peculiar age-distribution. In an industrial city the aged are financially the least favoured group. It is said that "the first cause of hunger and malnutrition is poverty," and in fact 29 patients in our series admitted lack of money as the main cause of malnutrition. On closer analysis, however, it was often not just lack of money but unfavourable living conditions, loneliness, and the inability to spend money wisely, which brought about the state of malnutrition. The causes of nutritional deficiency other than adverse social conditions were physical handicaps such as osteo-arthritis of hip-joints, Parkinson's disease, strict ulcer diet, indifferent cooking, anorexia, and food faddism; but together they represent only a quarter of our cases under review. It appears, therefore, pertinent to deal with the financial and social aspects of old age in some detail.

Economic Factors

Various surveys in the past fifty years have indicated the close relation between poverty and old age and between poverty and malnutrition. The "human needs," or subsistence, as distinct from the optimum diet and its weekly costs at current prices have been calculated in those surveys (Rowntree 1918, Jones 1934, McGonigle and Kirby 1936, Schulz 1948, 1950). If, as Schulz (1950) found, a single person could only just obtain an adequate diet on about 12*s*. per week in 1950 this must have been even more difficult in 1952, since the index for food prices increased from 123 in June, 1950, to 150 in January, 1952, thus raising the figure of 12*s*. to 14*s*. 6*d*. In the analysis of the causes of malnutrition in our group, we blamed poverty if the weekly budget provided 12*s*. or less for food. The similarity of the diet taken by these people was striking, and the following sample was typical:

Breakfast.—Bread and butter or margarine, tea.

Midday (usually the main meal).—Either meat (more often brawn) or fish or one egg, on about three days a week; potatoes boiled or chipped, bread and butter or margarine. At week-ends a vegetable and meat stew would take the place of the above midday meal.

Tea.—Bread and butter or margarine, jam and tea.

Supper.—Cocoa or tea.

Most patients drew their full ration entitlement with the exception of meat, which was often refused because of expense, brawn being taken instead. Green vegetables—usually cabbage—were bought once a week. Citrous or other fruit was rarely eaten.

In 31 of the patients, details of income and expenditure were obtained, though accurate and complete figures were not available in every case.

Total expenditure on food for a whole family was known, for instance, but it was not possible to assess how much was spent on feeding the old man or woman within the family. In a few cases food expenses were known, but not the exact weekly income. In others details of fixed expenses (such as rent and fuel) were readily obtained, but the patients were uncertain about expenditure on food. In 8 patients weekly income was between 25*s*. and 30*s*., in 5 it was between 31*s*. and 35*s*., in 4 it was between 36*s*. and 40*s*., and 4 patients had more than 41*s*. to spend. Expenses for food were given in

exact figures by 26. The average weekly sum spent on food was 12*s.* 2*d.* The average rent was 7*s.* 2*d.* for 31 patients; 15 patients knew their fuel costs, with an average of 5*s.* 2*d.*, and 4*s.* was the average for light and gas for 9 patients. Only 3 admitted relative extravagance on alcohol and cigarettes sufficiently high to cut their resources for food below the minimum need. Another 3 had to pay high rents, leaving too little money for food.

Of 31 patients, 15 did not admit to any additional resources besides old-age pension. The remainder received supplementary pensions from the National Assistance Board, from private employers, or in the form of seamen's pension in addition to the old-age pension. There is much to be said for the view that primary poverty among the aged can be avoided under present conditions, but it does require an approach to the National Assistance Board—a step which many old people seem to postpone as long as possible.

Symptoms

Detailed history-taking in malnourished old people is a time-consuming and trying task, which explains why malnutrition or even frank starvation often remains unsuspected before admission of the patient to hospital. As was to be expected, malignant disease of the gastro-intestinal tract figured first among the provisional diagnoses given by the general practitioner. Œdema associated with starvation was generally attributed to congestive cardiac failure or nephritis, and massive bleeding into subcutaneous tissues from scurvy simulated cellulitis. Only in 3 patients in our group of 39 had malnutrition been recognised before admission.

The duration of subnormal feeding was difficult to judge. Memory difficulties of the elderly were aggravated by the apathy due to malnutrition, and in many cases we had to rely on the statements of relatives and friends. The period of deficient food intake before hospital treatment varied between two months and eleven years, with the largest group giving two years as the length of time of ill-feeding.

The symptoms which led to the request for medical advice in the first instance were varied.

Anorexia was the leading symptom in 16 patients. It did not prove to be a manifestation of starvation as serious as it is in younger people (Schwarz 1945).

Two out of every three patients complained mainly of *lassitude*—a symptom far too usual among the aged ill to have any special significance in malnutrition.

Weight loss was the leading feature in 24 cases, but not much reliance can be placed on this figure: quite often we got unsatisfactory replies about weight loss. No comparable figures are available as to how younger people could have fared as regards weight loss on the diet which rather older people had taken for so long.

Alimentary upsets in the form of constipation were specially mentioned by 12 patients, but only 3 complained of diarrhœa—a proportion very different from that seen by one of us (Fuld 1945) in concentration-camp victims during the late war. The conditions of mass starvation in camps, however, are entirely different from those of our group, and the absence of diarrhœa in all but 3 of our cases was probably due to the lack of enteric infections which accompany overcrowding.

9 of our patients specially mentioned *difficulty in swallowing*. Of the 8 women 6 had a profound microcytic anæmia, while the man had only a mild normocytic anæmia. Dysphagia is common in elderly women with malnutrition accompanied by microcytic anæmia of severe degree; we presume that we were dealing with the Plummer-Vinson syndrome.

21 of our group mentioned *distressed breathing* as one of their main complaints. Uncomplicated starvation is said not to cause dyspnœa even after some physical exercise. In 5 patients of our series the dyspnœa was due to profound anæmia with hæmoglobin levels of 30% and below; in others cardiac and pulmonary insufficiency were responsible.

Difficulty in walking was noticed by 22 patients and the causes included arthritis, arteriosclerotic vertigo, hæmarthrosis of knee-joints due to scurvy, intermittent claudication, non-articular rheumatism, ulcers of legs, and neuritis. Most of these patients also complained of pain in the legs.

Signs

Severe emaciation was observed in only 3 of our female patients whose appearance was not unlike that of Belsen victims. Their recovery was complete, but took up to seven months.

Less drastic *weight loss* was found in all but 11 patients, of whom 7 were grossly œdematous so that the actual loss of body tissues was masked. Concealment of tissue loss by fluid retention is often observed in the course of obesity treatment.

Some degree of *œdema* was present in 20 cases; a third of these had cardiac insufficiency adequate to explain fluid retention on that basis alone. Of the remainder 8 were grossly anæmic, and had scurvy or a low plasma-protein. Gross nutritional œdema, affecting the whole body, associated with ascites and pleural fluid, such as was seen in concentration-camp victims, was only observed in 1 of our male middle-aged patients, whose plasma-protein on the third day of hospital stay was just over 5 g. per 100 ml. and who had lived on a diet free of water-soluble vitamins for several months. Three injections of 100 mg. vitamin B_1 on successive days caused a massive diuresis and completely cleared the fluid retention. Patients with renal œdema were omitted from our list.

Some degree of *vitamin-A deficiency* would have been expected in our patients if one accepts the data of the commission of the League of Nations which in 1937 decided that an adult requires about 3000 international units of vitamin A daily. This amount is present in about $3^1/_2$ oz. margarine or $1^3/_4$ oz. butter or 2 pints of milk, which is considerably more than the daily intake of most of our patients. An adult only absorbs 25% of carotene from carrots or spinach—vegetables which were rarely taken by any of our patients. Xerophthalmia was not observed in our group. No dark-adaptation tests were carried out. 12 patients showed hyperkeratosis of the outer aspects of thighs and legs, but in the absence of estimations of the plasma level of vitamin A we felt these changes could not with any certainty be attributed to vitamin-A deficiency, particularly as similar skin changes can be produced by deficiency of the vitamin-B complex, by vitamin-C deficiency, and by senile atrophy of the skin.

Only 1 of the patients under review to whom we have referred also showed clinical signs of *thiamine deficiency*. The therapeutic dose with injection of vitamin B_1 at the onset of treatment when the patient had received no other form of therapy resulted in massive diuresis and cessation of diarrhœa.

10 patients suffered from angular stomatitis or cheilosis. There were in addition 13 who had glossitis alone, 3 cases of long-standing diarrhœa, and 1 male patient with diarrhœa and dementia which cleared up under treatment with compound vitamin-B tablets. Almost all our patients were living on a diet grossly deficient of the chief sources of *vitamin* B_2, particularly of fresh green leaves, liver, kidney, or pork.

It is recognised that acute and complete starvation is rarely associated with vitamin deficiency. Bruckner et al. (1938) suggested that this is due to liberation of the required vitamins from tissue breakdown, which would explain the experience that vitamin deficiencies are more prevalent in starvation not accompanied by severe weight-loss. Our patients suffered from semistarvation, and it is in these cases that the type of food available determines the type of vitamin deficiency which is likely to develop. The problem is difficult, however, as vitamin-deficiency symptoms such as keratomalacia, follicular hyperkeratosis, and œdema may be ascribed to the semi-starvation itself rather than to a specific vitamin deficiency. In doubtful cases we have been guided in the diagnosis by the effects of large doses of a specific vitamin given by injection. We assumed, for instance, that disappearance of glossitis and angular stomatitis within a few days after intramuscular injections with large doses of the vitamin-B complex can be of diagnostic value.

The diagnosis of clinical *scurvy* was far less dubious than that of vitamin-B deficiency. We saw 19 cases of scurvy; the clinical criteria being:

1. History of gross dietary deficiency in fruit and fresh vegetables.

2. Presence of hæmorrhages in skin, subcutaneous tissue, and joints, and swelling of the gums (absent in edentulous patients).

3. Positive Hess test.

4. Significant results with ascorbic-acid saturation tests (not carried out in all patients).

All but 2 of our scurvy patients were anæmic to a greater or lesser degree; 7 had a normocytic anæmia and the blood films of the other 9 showed microcytosis and hypochromia. In 2 patients the anæmia was macrocytic on admission but became normocytic under treatment with ascorbic acid, as described by Parsons (1938). 17 patients developed scurvy because they could not afford vegetables and fruit. One had adhered to a strict ulcer diet, and another was mentally deranged and unfit to cater for herself.

We have not observed in our group a single case of malnutrition with clinical evidence of *vitamin-D deficiency*. Nor have we seen the hunger osteopathy described in Holland after the Liberation.

The *skin* of most of our patients was dry, loose, scaly, and atrophic—changes which recur in most reports from famines. In our group with its high age-level no special significance has been attributed to these changes, which could be due to senile atrophy alone without malnutrition. We were, however, struck with the high incidence of *pigmentation*, shown by more than a quarter of the patients. This was general and not localised to the exposed parts. One extreme case suggested Negro origin, which was not borne out by an interview with relations: it was in fact a severe case of "melanodermia of vagabonds" in a heavily-infested starved woman whose home conditions were indescribable. Some degree of skin pigmentation in most victims of starvation has been reported by one of us (Fuld 1945) from Belsen camp. We believe that at least three factors were responsible for the pigmentation in our group—infestation, starvation, and possibly nicotinic-acid deficiency. Pigmentation faded with improvement of the general condition.

The *dental state* in 21 of our patients was deplorable; the remaining 18 were edentulous; dental caries was present in 14; the other 2 had pyorrhœa and loose teeth. It is often said that bad nutrition results in an increased incidence of dental caries, and that dietary improvement should reduce the tendency of teeth to decay. There is no support for this view from field experiences during the late war, from reports from famine areas, or from controlled experiments. The history of our patients suggested that their poor dental state was the effect of life-long neglect.

Notes were made on the *mental state* of the 39 patients on admission to hospital. The behaviour and outlook of 28 corresponded to the average expected in patients of their age-group and social environment; 11 showed definite changes, with apathy and an attitude of hopelessness in 9, and anxiety and agitation in 2. "Primary" senile dementia cases were omitted from this series. The progress made during treatment, and the disappearance of mental aberration, suggested that the psychological changes were at least partly due to malnutrition, which had affected the whole organism including the mental functions.

How far malnutrition as such can be blamed for mental changes cannot be assessed. The relentlessly depressing effect of poverty, dirt and cold—but particularly of loneliness—over a period of years is in itself sufficient to cause personality changes; but it seemed to us that the profound state of apathy was a direct effect of malnutrition. Some seriously ill patients in advanced states of semistarvation presented a typical appearance, identical with that seen among prisoners at the Belsen camp. They lay curled up on their sides and were entirely unconcerned about activities in the ward, but often resented any interference, such as washing or physical examination. Bladder and rectal incontinence were almost invariably present during the first week after admission, and feeding was difficult at this stage and often resented. One may speculate about the possibility of physical lesions in the central nervous system (C.N.S.) and resulting mental changes, but the tissues of the C.N.S. are more resistant to morphological changes by starvation than those of any other organs. No post-mortem examinations of the C.N.S. were carried out in the very few of our patients suffering from extreme starvation who died within a few days after admission.

Malnutrition and Gastric Secretion

Gastric secretion was tested in all our patients except 3 who refused permission. We were interested in the effects of malnutrition on gastric acidity and its relation to anæmia. Our experience of normal or average values of gastric acidity in the elderly was limited, since occasion seldom arises for carrying out fractional test-meals in old people, except for the differential diagnosis of anæmia and for suspected malignant disease of the stomach. We have, however, records of fractional test-meals in a number of elderly patients who were clinically free of digestive disorders, blood-diseases, and nutritional defects. Of the 26 males above the age of sixty, 15 (58%) had a histamine-fast achlorhydria, while of the 42 females above that age, 26 (62%) had a complete absence of hydrochloric acid.

In our malnutrition series 36 patients were given a fractional test-meal within a few days of admission. 27 (70%) had a histamine-fast achlorhydria, 1 had low acid secretion, 5 showed excessive values for total and free hydrochloric acid, and 3 secreted normal amounts. Of these 36, 27 were re-examined by gastric analysis at the end of their treatment. At that time 7 patients with initial achlorhydria had recovered their gastric secretion, 5 of them showing a normal acidity curve, 1 hyperchlorhydria, and 1 hypochlorhydria. The remaining 17, after clinical recovery, still had achlorhydria. We have gained the impression that malnutrition definitely contributes towards achlorhydria, and that successful treatment of malnutrition tends to restore gastric secretion in some patients. As a result, the incidence of achlorhydria in the recovered patients resembles that which we found in our control series of people of the same age-group.

Malnutrition and Anæmia

Apperley (1936) believed in a direct relation between *red-cell count* of the blood *and gastric acidity*. He states that a fall of the red-cell count to half or two-thirds of normal is followed by disappearance of free hydrochloric acid in the gastric secretion. He distinguishes, therefore, between the achlorhydric anæmia of Witts and anæmic achlorhydria. We could not confirm his observations. 4 of our patients had a blood-count of less than half of normal, but showed average gastric secretion in fractional test-meals.

All but 3 of our patients were anæmic to a degree varying from 80 to 25% hæmoglobin, with red cells as low as 2 million per c.mm. The anæmia was normocytic in 12 patients, microcytic in 20, and macrocytic in 3. Of the macrocytic anæmia cases, 2 had low protein levels on admission and had lived on tea, bread, potatoes, and jam. After treatment, which included a high-protein diet, but excluded folic acid, liver, and vitamin B_{12}, the anæmia cleared up and the blood became normocytic. Achlorhydria was converted into normal gastric secretion in 1 of these cases.

The third patient with macrocytic anæmia, aged 69, was admitted in a condition of extreme neglect. She had lived for several months on a diet which excluded any green vegetables; on very rare occasions she took first-class protein in the form

of fish or bacon. Her anæmia was hyperchromic on admission (2·6 million red cells, 60% hæmoglobin, colour-index 1·2). Her bone-marrow count did not suggest pernicious anæmia. She made a full recovery on a high-protein diet reinforced by vitamins. This patient's condition was reviewed six and twelve months after her hospital treatment and although she had recovered from her anæmia the colour-index remained above 1·0. On the last count she had 4 million red cells, 115% hæmoglobin, and colour-index of 1·5.

Treatment and its Effects

The treatment of complete and partial starvation in the elderly did not present any special problems. Only a few patients arrived at hospital in a state of starvation so severe that they could neither swallow nor digest simple foods. They were treated initially by skimmed-milk drips through a Ryle's tube. After two days on such a régime they were able to swallow foods. The early rehabilitation diet was of low bulk in all patients, and usually consisted in skimmed-milk reinforced by 'Casilan' (Glaxo). Compound vitamin B tablets 6 daily, with ascorbic acid 200 mg., were added. There was rarely any need for vitamin injections. Iron was given orally, or more often by intravenous injection. In the great majority of our patients, simple foods taken by mouth in small quantities frequently were well tolerated within two or three days. Thereafter the nutritional rules which apply to feeding in childhood were followed until such time as the patients could digest and assimilate ordinary hospital diet, distributed in four meals a day. There was no relation between gastric secretion and appetite in our cases. Although most of them had achlorhydria at the onset of treatment, we found no indication for prescribing hydrochloric acid. Given the chance most old people tend to eat more than they need, and our patients ate surprisingly well after a very short period of rehabilitation. They kept on eating somewhat excessively even after they had fully recovered.

Weight Gain.—The value of gain in body-weight is difficult to assess. Fat deposits tend to increase at a faster rate than that of active tissues, and changes in body hydration are a complicating factor. It is, nevertheless, one of the indices of nutritional rehabilitation. Of 17 patients, 13 gained an average of 10 lb. with a range of 2–21 lb., 5 gaining more than 1 st. Of the remainder 1 showed no change, and 3 lost an average of $4^1/_2$ lb., the higher initial weight being due to fluid retention.

The results in this series of 39 cases did not entirely represent our experience during the last seven years. We have treated a far larger number than the series reported here, but have omitted them because of lack of certain investigations or adequate follow-up or on account of associated diseases which had some major influence on the patient's condition. During the earlier years, at the time when the present wide range of antibiotics was not available, we lost patients in an advanced stage of starvation from sudden heart-failure, and from intercurrent infection. In the present series we lost only 1 patient, who developed an intractable diarrhœa.

Duration of Hospital Stay.—The minimum time of stay for patients with nutritional deficiencies was three weeks. Some advanced cases of starvation in the aged required up to nine months for full rehabilitation. Widespread pigmentation in long-standing cases of malnutrition may take up to twelve months to clear. More often than not hospital care had to be extended well beyond the period required for physical recovery. There is no group of patients in whom social problems play a bigger part in the ætiology of the condition, or in the "disposal" at the end of treatment. Many of them had no homes to return to, and neither relatives nor friends to accept their care. Some were eventually accommodated in municipal institutions and charitable homes. There remained a group which refused to enter such institutions and therefore had to remain under the roof of the hospital.

Follow-up

Patients were followed up after discharge either at the hospital or at home. Specific questions were put to 12 patients, selected at random, for visits in their homes by staff attached to the Medical Officer of Health's department in Liverpool. We were interested to know whether the patients had seen their doctors (who had received full reports from us); and comparisons were made between diet after hospital discharge with the conditions before admission. Details of the diet with supplements like vitamins and iron were recorded as accurately as possible. Living conditions were compared with the pre-hospital period, and the investigator tried to find out from the patients whether they had in fact realised that undernourishment was the cause of their ill health.

The result of this small-scale inquiry was disappointing. Of the 12 patients only 8 had visited their doctor at home or had called him in. Only 4 had improved on their diet, and 2 more had kept well by taking vitamin-C tablets for scurvy which was their original disability. The living conditions of the 4 patients who were taking an adequate diet had materially improved.

CASE 1.—Mrs. A, previously under the care of a landlady who is alleged to have given her short rations. Now living with sister who looks after her well. Her actual financial position is unchanged.

CASE 2.—Mrs. B, wife of a regular soldier, living with 3 children. She had been starving herself to feed the children, and was admitted with an iron-deficiency anæmia (Hb 25%). She had been advised on diet by her own doctor and claimed to be eating more than before admission to hospital.

CASE 3.—Mr. C lived alone in an old-age-pensioner's flat, preparing his own meals. Now living with a son and daughter-in-law. No actual change in financial position.

CASE 4.—Mrs. D, a widow still living with her son to whom the mother's condition was explained, and who had persuaded her to eat more. No change in financial position.

All but 1 of the patients whose living conditions were improved had consulted their doctor. Of the "failures" only 3 had visited their doctor since discharge. Adverse reports on personality and living conditions were made by the investigators in 5 of the 6 relapsed cases, of whom only 1 supplemented the deficient diet by vitamins and iron. Of these 6 patients who had gone back to the subnormal standard of feeding, 1 had returned to his common lodging-house, taking his meals outside (carbohydrates and tea); 1 refused any food containing fat, and had lost 11 lb. in weight since discharge; and 1 had no cooking facilities except an open fire. In only 2 of the relapsed cases was lack of money the only factor.

Prevention

Hospital treatment of malnutrition in the aged is long and expensive, and—quite apart from humanitarian considerations—this should make us prefer prevention. Inadequate feeding, unsatisfactory housing, loneliness, and hopelessness are the main factors which eventually bring the patients to hospital. Ideally they should have been dealt with at the source. Yet only a small proportion of people in this country know about the incidence of malnutrition in the elderly and its social implication.

To quote David Lloyd George "How we treat our old people is a crucial test of our national quality."

Care for the aged is, of course, primarily a family affair. The duties involved, which usually fall upon a daughter or daughter-in-law, are uncongenial. The problem is aggravated by the frequent necessity for the woman in the household to go out to work to supplement the family income. For obvious reasons it is desirable that old people without a family should occupy the ground-floor flats of tenement buildings or an old people's hostel in a housing estate with arrangements for communal cooking and general supervision by a matron. Until these ideal conditions prevail, we suggest that

malnutrition and starvation cases be notified by the general practitioner to the medical officer of health, so that health visitors may investigate the social conditions of each case and report their findings to the hospital if admission is deemed necessary. The health visitors should also be notified on the patient's discharge from hospital so that they can supervise him at home. Iron tablets and vitamin compounds could be supplied to the elderly on the same principle as cod-liver oil is freely supplied to children.

Lord Beveridge wrote: "It is dangerous to be in any way lavish to old age until adequate provision has been assured for all other vital needs such as prevention of disease and the adequate nutrition of the young." But this was written in the pre-penicillin days of 1942 when pneumonia still sealed the fate of many old people in the winter months of each year. Since then changes in the age-distribution of the population have been brought about to a great extent by the introduction of antibiotics, while adequate nutrition of the young has been assured and preventive measures against infectious disease in childhood had a great measure of success. The conditions of Lord Beveridge's statement of ten years ago are therefore fulfilled, and the time has come to consider more closely the welfare of the aged population by directing preventive measures towards those over sixty. These measures should include suitable housing accommodation for the lonely aged, arrangements for communal feeding and settlements for the aged, or "meals on wheels"; vitamins and iron supplements through clinics, or through practitioners, to those in need; and regular visits by welfare workers to lonely elderly who have a record of medical attention for malnutrition.

Summary

Even today, grave malnutrition in the elderly is not uncommon and often goes unrecognised.

A series of 39 cases seen at one hospital during seventeen months is described, with observations on the effect of starvation on the mental state in old age.

The results of test-meals in 36 of the patients suggested that malnutrition increases the incidence of achlorhydria in the aged. In some cases, but not in others, the achlorhydria was reversed by treatment. We have found no relation between achlorhydria and the degree of anæmia.

Most of our patients had a microcytic or normocytic anæmia; only 3 had macrocytic anæmias.

Response to treatment was generally good, but sometimes slow; and for social reasons the patients often had to be kept in hospital well beyond the period required for physical recovery. After discharge from hospital many of the patients unfortunately returned to the diets or conditions which had caused them to starve.

Prevention of malnutrition in the elderly will require combined action in the social and medical spheres. For this reason notification of cases of starvation to the medical officer of health's department is suggested.

We wish to thank Dr. A. B. Semple, medical officer of health for Liverpool, and his staff for their coöperation in the follow-up of our patients, and Dr. J. Carr Brundret, Dr. E. H. Moorhouse, and Dr. R. Y. Dawbarn for their ready help in pathological investigations and their advice.

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INCISION FOR ACUTE APPENDICITIS

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THE frequency with which the acute appendix is approached, in this country, through a midline or a paramedian incision must result from the continued teaching in our medical schools of these as incisions of choice. They certainly have the sanction of many of the standard works on operative surgery. We contend that these incisions should be discouraged in the treatment of the acutely inflamed appendix.

The acute appendix has, of course, been successfully removed from the right iliac fossa through a variety of incisions, ranging from the midline epigastric to the right groin incision for hernia. This is no indication, however, for their general adoption in the treatment of a condition which is responsible every year in England and Wales for 1200 deaths as well as for a considerable morbidity.

The ideal incision should give the most direct access to the appendix, with the minimum of manipulation and retraction both of the parietes and of the abdominal contents; it should involve the least opening up of tissue planes in the abdominal wall which may harbour subsequent infection; for the difficult case, it should be safely extensible in either direction without injury to nerves; it is helpful if drainage can be conveniently established through it; it should be conducive to early rising without increased risk of hernia formation; and the risk of subsequent herniation should be small, whilst if a hernia does occur it should lend itself to safe and sound repair.

How do the incisions in common use fulfil these criteria?

INCISIONS IN RIGHT ILIAC FOSSA

The *muscle-splitting incision* gives a slightly oblique line of approach to the appendix, erring on the lateral or flank aspect. This is a good fault, however, in that it involves less disturbance to the general peritoneal contents. Not necessarily where McBurney (1894) first described it, but intelligently placed at a higher or lower level according to the physical signs, this incision affords fair access. If the exposure is limited, the incision can be safely extended laterally by cutting the internal oblique and transversus muscles, or medially by opening the rectus sheath. Being valvular it is quickly made and closed, is strong from the outset, and favours early rising. The risk of subsequent herniation is slight, and should such a hernia occur it can be repaired with an excellent chance of success.

The *muscle-cutting incision* gives slightly better access to the appendix with less retraction. Since more bleeding ensues, however, it is more time-consuming in the making. It lies parallel to the line of the somatic nerves, which should therefore not be liable to injury. Whether they are in fact so immune in sewing up the incision is a matter of opinion. It has been suggested that their inclusion in sutures during the closure of the wound is responsible for the diffuse bulge at the inner end of the scar which is seen from time to time. The incision is good for drainage and reasonably good for early rising; the risk of hernia is not great, and the results of repair are satisfactory.

When appendicectomy is likely to be difficult, as in an obese patient who has had previous attacks and is diagnosed late, or when operating facilities and assistance are not perfect, a muscle-cutting incision is to be preferred. In so far as it cuts rather than separates muscle-fibres in the presence of likely infection, it does more injury to the abdominal wall than does the muscle-splitting incision; the risk of injury to nerves is also probably

greater. These disadvantages are, however, in the difficult case more than outweighed by the better access which it affords, allowing the appendix to be removed with less deep retraction, less handling of the bowel, and less peritoneal soiling.

BATTLE'S INCISION

Being placed closest to the surface marking of the base of the appendix, Battle's incision gives the most direct access to it. It is valvular and favourable for early mobilisation. On the other hand, it opens up the rectus sheath widely, involves considerable retraction, and cannot be safely extended in either direction for fear of injury to the 11th or 12th thoracic nerves. In the difficult case where extension of the incision has been necessary the risk of subsequent hernia is considerable. Should such a hernia occur its repair is neither easy nor by any means always successful. In first describing the incision, for the removal of a non-urgent appendix, Battle (1895) stated that its advantage lay in the interposition of the rectus muscle between the two parts of the incision, which would prevent the development of a hernia. If drainage is used, the drain prevents this interposition of the rectus and therefore robs the incision of its chief merit.

In view of these disadvantages we maintain that Battle's incision has no place in the treatment of the acute appendix.

MIDLINE AND PARAMEDIAN INCISIONS

These incisions have the support of tradition; they also have undoubted advantage in the treatment of the difficult pelvic appendix; moreover it is claimed for them, that if the diagnosis is incorrect, other lesions can be dealt with conveniently through the same incision.

As regards tradition the position should be carefully reviewed; as regards other lesions such incisions should not be used as a cloak for slovenly diagnosis, with the excuse that the incision is the same in any case. The disadvantages of these incisions are formidable and have hitherto been too little emphasised. To the appendix in the right iliac fossa they give an oblique approach from the inner side, across the general peritoneal cavity. Handling and retraction of the lower ileum are essential, interfering with the natural process of localisation and favouring the development of immediate peritonitis and ileus, as well as of subsequent adhesions. Early rising is contra-indicated because the abdominal muscles in contracting pull away from the wound. Lastly, but by no means least, the risk of incisional hernia is probably greater than with any other abdominal incision. Further, such a hernia is notoriously difficult of cure and has not infrequently led to lifelong invalidism.

CASE-RECORD

A boy, aged 10 years, was awoken at night by lower abdominal pain; he vomited once. When he was seen by his doctor next morning the pain had gone, and he was given a bottle of medicine. Four days later he was admitted to hospital urgently with symptoms and signs of acute intestinal obstruction, including well-marked ladder-pattern visible peristalsis. Its cause was obscure.

Operation.—After aspiration of the stomach and an intravenous infusion, the abdomen was opened through a right lower paramedian incision. Coils of distended ileum escaped from the incision, and after much retraction and handling of the bowel foul-smelling pus escaped from an abscess round a gangrenous appendix lying over the brim of the pelvis on the right side. The appendix was removed and the wound closed with drainage through its lower end. Discharge continued for $2^1/_2$ weeks, and the wound became infected. An incisional hernia developed throughout the length of the wound, with $1^3/_4$ inches separation of the recti.

Readmission.—Nine weeks later the patient was readmitted with subacute intestinal obstruction, a large tense coil of intestine being palpable under the scar. The condition did not subside with medical treatment, and laparotomy was again necessary. The boy is now left with a large incisional hernia. He is a keen footballer and wishes to know when he may start playing again.

It was very much regretted that a muscle-splitting incision was not used in this case.

CONCLUSIONS

In all cases in which acute appendicitis is diagnosed a muscle-splitting incision should be made in the position suggested by the physical signs. If removal of the appendix is difficult the incision should be prolonged by converting it into a muscle-cutting incision.

If the diagnosis is uncertain but acute appendicitis is a possibility, the first approach should be through a muscle-splitting incision. If the appendix proves to be the source of the trouble, much has been gained. If the appendix is healthy and the cause of the condition cannot be readily dealt with from this approach, a second incision is made in the appropriate place.

A second incision may be an unpleasant surprise for the patient and is something of a blow to the surgeon's pride, but it is of no significance when compared with the morbidity, both early and late, which may follow the unwise removal of a gangrenous appendix through a median incision.

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Medical Societies

MANCHESTER MEDICAL SOCIETY

Transfusion Problems

IN the section of pathology on Oct. 14 Dr. J. F. WILKINSON said that, though the transfusion of blood and blood products often saved life, it could also be wasteful, unnecessary, and even dangerous. The decision to transfuse a patient and the type and quantity of the product to be used (whole blood, packed cells, blood fractions, or substitutes) was the responsibility of the clinician, who alone could decide from a study of all the clinical and pathological features of the case.

Dr. F. STRATTON, director of the North West Regional Blood Transfusion Service, observed that at the Manchester Royal Infirmary the reaction-rate from transfusions was about 2·8%. Assuming that the blood was correctly matched, reactions were due to any of four factors: pyrogens, which could be present in chemicals or arise from bacterial growth in distilled water; too rapid transfusion; the administration of small quantities of air, which could be avoided by careful filling of the distal tubing of the giving set; or sensitivity to plasma, which was found in the recently delivered woman or where there had been abortion. Such reactions could be avoided by giving the blood slowly in a carefully estimated amount; by warming the patient (never the blood); and finally by a careful cross-match, including a saline agglutination and Coombs test for incomplete antibody, using a serum which was both potent and specific.

Dr. R. F. JENNISON, speaking as a hospital pathologist responsible for the operation of a blood bank, said that the refrigerator in which blood was kept must be locked; only specified persons should be allowed to take blood from it, all such removals being recorded and signed in a book. The messenger taking blood to the wards should produce a written slip, to avoid mistakes in identity, while any resident staff who were not attached to the pathology department and who might have to cross-match blood at night should be examined by the pathologist to make sure that they were competent to make the necessary tests.

Dr. R. W. FAIRBROTHER said that some recent transfusion disasters had been due to gross carelessness.

Clinicians often left the decision about transfusion to the most junior member of the team, and even to the sister in charge of the case. During the past twelve months there had been two fatal accidents caused by nurses taking blood out of the refrigerator and connecting it up to the drip. The surgeon should not ignore his responsibility in transfusion matters.

Reviews of Books

Modern Treatment

A Guide for General Practice. Editors: AUSTIN SMITH, M.D., editor of the *Journal of the American Medical Association*; PAUL L. WERMER, M.D., secretary, committee on research, American Medical Association. London: Cassell. 1953. Pp. 1146. £7 7*s*.

THIS important book carries the weight of authority of 53 American authors of high standing, and is clearly the result of much labour and care. Whether it will in fact, as the editors hope, provide a new kind of aid for general practice is less certain. How best to provide help in a rapidly changing therapeutic era is still an open question and this book has not necessarily found the ideal method. For the practitioner clear and precise advice is often needed; yet in many forms of treatment this is just what it may be impossible to give. General principles may not be enough, and to omit some subjects or aspects of a problem because they are not solved or are still under investigation is more cautious than helpful.

Nonetheless the book provides a vast amount of shrewd, balanced, and helpful information. It is surprisingly up to date and for the most part simple and easy to read. It is much more than a mere index of therapeutic agents and methods: it is almost a complete textbook of medicine in itself and includes much that is not directly concerned with treatment. Thus ætiology and diagnosis are included and there are separate chapters on laboratory methods of investigation, diagnostic radiology, and such subjects as the general principles of infection, the patient-physician relationship, and clinical immunology. The chapters on psychosomatic medicine and geriatrics are particularly good. There are no illustrations but the printing is beautifully clear and it is easy to see why the book costs seven guineas.

The Ship Captain's Medical Guide

19th ed. Ministry of Transport. Editor: M. T. MORGAN, M.C., M.D., medical officer of health, Port of London. H.M. Stationery Office. 1953. Pp. 337. 21*s*.

THE price and size of the new edition of this venerable publication, once a slim pocket volume, may induce some ancient mariners to list it as an added peril of the sea. But for all that it is a magnificent compilation on art paper in royal octavo with well-chosen diagrams and illustrations, many in colour.

The contents range from bug destruction to bubonic plague, from ant-bites to the Archbishop of Canterbury (p. 299). The whole is a gallant attempt to present to a layman of proved intelligence a précis of the more practical parts of the six-year medical curriculum. Added to this are 104 pages on first-aid and 25 on general nursing. The authors have made the book readable despite its intense compression, and even a specialist will learn something fresh from the 8 pages on malaria or from the section on the venereal diseases. It is not their fault that the antibiotics section is already out of date, though even last year few of us would have advised a 28-day course of penicillin injections. The absolute restriction of chloramphenicol to cases of suspected typhoid fever also seems strange. There could be little risk and possibly great benefit in trying a short course of this drug in lethal conditions when penicillin has obviously failed. True to form, the fashion in artificial respiration methods has again changed. Official blessing is now given to the Holger Nielsen arm-lift back-pressure method and a 5-page appendix with illustrations describing the technique is cunningly housed in a special pocket together with a further 56-page brochure entitled Medical Scales.

At a conservative estimate, this volume should provide bedside reading to the conscientious ship's master for at least three return voyages to Australia.

Adrenal Cortex

Transactions of the Fourth Conference, November, 1952. Editor: ELAINE P. RALLI, M.D., associate professor of medicine, New York University. New York: Josiah Macy, Jr., Foundation. 1953. Pp. 165. $4.00.

THIS account of the latest Macy conference on the adrenal cortex gives an impressive picture of the volume and complexity of contemporary research into the significance of the adrenal cortical hormones in health and disease.

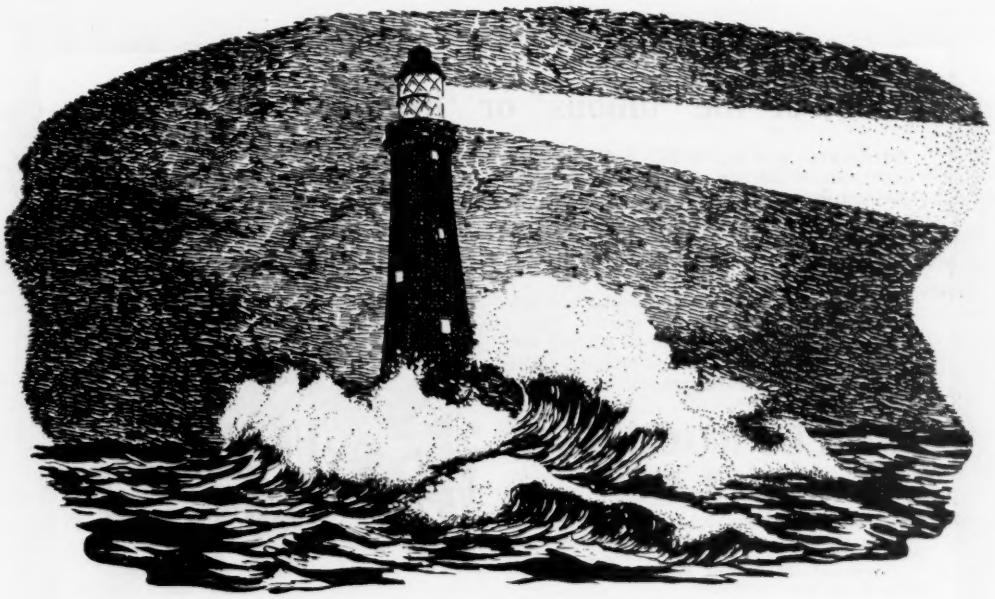
The preoccupation of the conference members with new purely experimental work (mainly biological and biochemical) emphasises how slender still is the pharmacological basis on which the therapeutic applications of the adrenal steroids rest. Of the four main discussion topics only one—adrenalectomy in man—falls into the clinical category. Two long discussions are devoted to the concept of the "permissive action" of adrenal corticoids, and to the mechanisms through which the adrenal cortex can produce qualitatively different effects. Although the argument is well sustained, and the brilliance of Professor Selye's exposition gives much pleasure in the reading, the general reader may find this difficult stuff, and perhaps unrewarding. The most useful section is that on the existence and nature of the salt-retaining hormone ("electrocortin") detected by the Middlesex Hospital workers, and recently crystallised by Professor Reichstein. Dr. Marthe Vogt's account of this steroid, and the discussion following, will be helpful to many now attempting to keep up with advances in adrenal physiology.

A Study of Hæmoglobin Values in New South Wales

R. J. WALSH, BARBARA J. ARNOLD, H. O. LANCASTER, MARGARET A. COOTE, HELEN COTTER. National Health and Medical Research Council: Special Report Series no. 5. Canberra. 1953. Pp. 84.

THIS monograph supplements the surveys of hæmoglobin values carried out in this country, the U.S.A., and elsewhere. The photoelectric instrument used is fully described, as are the precautions taken to ensure accuracy. The results, which are well set out, are generally similar to those obtained in other places. It is interesting to note that in New South Wales it is the public servants, bank officers, and shop assistants who have the reddest blood: the Armed Forces show the lowest mean hæmoglobin of the occupational groups tested. Values in pregnancy remind us of the steady fall in hæmoglobin—from a maximum average of 13·26 g. per 100 ml. to a minimum average of 12·10 g.—between the 28th and the 32nd week. Diurnal variation is considered and found not to be very important; values at 1 P.M. tend to be a little lower than average. The authors support the opinion that the ear is the worst site for taking blood, and the vein the best. The tables on variations in childhood are useful, and an interesting diagram shows the total hæmoglobin in grammes added to the body during the years of growth; in the male most is added in the 14th year, in the female in the 13th year.

Natural History of Infectious Disease (2nd ed. Cambridge: University Press. 1953. Pp. 356. 22*s*. 6*d*.).—The second edition of Sir Macfarlane Burnet's book, which already has achieved a unique place among works on infectious diseases, is relatively unchanged. There are 40 more pages, some new illustrations, a new chapter on chemotherapy, and some rewriting of some of the older chapters. Considering the great changes in the incidence of infection and in therapeutic practice it may seem surprising that more alteration has not been necessary thirteen years after the first edition; but this is a book about the biology of infection, and much that we rank as revolutionary—including the introduction of the antibiotics—is too recent for the full impact on bacterial disease to have been felt. Control of vector-borne disease, and immunisation against such diseases as diphtheria and yellow fever, have had much more rapid biological effects. The author considers that the mid-point of the 20th century may come to be seen as the period when it became clear that infectious diseases could be virtually eliminated. The outlook for the future, as he sees it, depends much more upon man's threat to use microbiology as a weapon of war than upon Nature.



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THE LANCET

LONDON: SATURDAY, OCT. 24, 1953

Truth from Statistics

THE W.H.O. conference on medical statistics, held in London last week,[1] differed from many other international gatherings of this sort by arriving at a firm and constructive conclusion: the delegates acclaimed the concept of national committees, composed of interested people from government and medicine, linked by a W.H.O. central unit and refreshed by regular international conferences. The intention is that these should act as a statistical conscience, stimulating and training people to do fresh work, getting rid of useless routine tabulations, and publicising the value of statistical research. The means to this end were the main topic of discussion.

The conference crystallised the notion that sampling procedures are often cheaper, quicker, and better than apparently complete collections of vital-statistical data. In the technically advanced countries, where registration of births and deaths is essential to the smooth working of systems of social security, this is effected completely and reliably. In no country, however, is the cause of death always recorded accurately—the registered causes of death from more than one disorder in older people are particularly open to question—and in some countries the certifying physician may be influenced by the legal and psychological consequences of certifying certain causes. This difficulty can be overcome by necropsy or other special inquiry in a small but representative sample. Then again, the results of a decennial census may be affected by movements of people from job to job or place to place; and this calls for repeated sampling surveys of the occupational and geographical distribution of the population. Sampling may be valuable, too, in studies of morbidity: no regulations demanding the notification of all cases of even a few non-infectious diseases would be fully obeyed, but much could be learnt from detailed reports of a small random sample of interested general practitioners. Likewise, in the technically less advanced countries, where registration of births and deaths is incomplete, trends in fertility and mortality can be discerned from the carefully recorded experience of small areas chosen to represent all sections of the country; in such areas the prevalence of sickness of all kinds can best be ascertained from intensive studies by mobile medical survey teams. Indeed, whatever the need, sampling can give answers quickly, accurately, and cheaply. Although the cost per subject may be higher than in a complete survey, the total cost, measured in terms of useful information, is much smaller; and, if time is indeed money, the rapid tabulation from a sample survey represents a further saving. At first sight, it would seem unrealistic to use sampling methods to check the accuracy of a complete registration; but when, for example, some 20% of disabling illnesses are assigned to no clearly defined cause, the only possible way to learn more is to investigate a representative sample and to generalise from the results thus obtained.

Without trained staff, all this would be out of the question, and the conference made parallel recommendations on training. The United Nations central statistical organisation is producing instruction manuals; and the exchange between different countries of coding details and other training material should ensure accuracy and uniformity in classification. Furthermore, the epidemiological and statistical section of W.H.O. is being encouraged to attune training methods to the public-health requirements of member countries. These and other measures, such as special courses and fellowships, will help to meet the need for lay "health statisticians," and for medical specialists in preventive medicine to interpret and use the results obtained. The main problem now rests with our own profession. Unless the general practitioner is convinced that certification has a clearly useful object, he is not going to give it the conscientious attention it demands: he must see that the data he provides are used quickly and effectively by other medical men—locally, nationally, and internationally. It is his interest that the national committees must strive to seize and sustain.

1. See *Lancet*, Oct. 17, 1953, p. 818.

Coarctation of the Aorta

ANATOMISTS have recognised aortic coarctation for two hundred years. Yet less than thirty years ago a cardiologist declared that "the diagnosis is rarely made during life"[1]; and it was only after the publication in 1933 of accounts by LEWIS[2] and EVANS[3] that this situation was changed. Coarctation of the aorta is a very serious abnormality. A few patients with it reach old age; but without surgical treatment many die in infancy, and of those who reach the age of 17 more than half die before the age of 34. The remarkable advances in vascular surgery[4] have, however, entirely changed the outlook.

The cause of the defect is unknown; but it has been found in embryos and is probably a true error of development, unconnected with the closure of the ductus arteriosus. Its prevalence is difficult to assess; but it must be lower than the necropsy figure of 1 in 2000, and obviously it is higher than the 1 in 80,000 estimated from mass-radiography examinations. A useful distinction may be made between: (*a*) the so-called infantile type, where the defect is usually severe (sometimes amounting to atresia of the aorta) and is often accompanied by other congenital defects in the cardiovascular system and elsewhere; and (*b*) the adult type, where the narrowing is less severe. With this type there is commonly no other serious abnormality; but in 25% of cases there is a bicuspid aortic valve, and the prevalence of berry aneurysms at the base of the brain is undoubtedly higher than the average. In some cases, too, the ductus arteriosus remains patent. In the adult type the constriction varies from an annular stenosis to a narrowed segment several centimetres long. The constriction is usually just below the opening of the ductus, but may be at or above this level, or occasionally in the lower dorsal[5]

1 King, J. T. *Arch. Intern. Med.* 1926, **38**, 69.
2. Lewis, T. *Heart*, 1933, **16**, 205.
3. Evans, W. *Quart. J. Med.* 1933, **2**, 1.
4. See *Lancet*, Sept. 19, 1953, p. 604.
5. Brock, R. C., Graham, A. J. P. *Guy's Hosp. Rep.* 1952, **101**, 207.

or abdominal aorta. With the stenosis there is often kinking and distortion of the proximal aorta; this may involve the left subclavian artery, which may bulge laterally and make the radiographic appearance more confusing. The aorta on both sides of the stenosis may be dilated; proximally the dilatation, sometimes aneurysmal, may be partly due to the associated hypertension, but below the stenosis this cannot be so, and no entirely satisfactory explanation has been found. It is known, however, that the vessel walls near the coarctation may be defective and lacking in elastic tissue, and this may be connected with a lack of the stimulus normally provided by arterial pulsation. The presence of a high resistance in so large an artery produces considerable changes in the circulation. In patients who survive, the adjustment is remarkably successful, and the blood-flow in the lower limbs is usually quite normal. The collateral circulation which develops takes much of the total flow; but although this is normally very free it has a higher resistance than the normal channels, and the drop in pressure across these resistances is offset by a rise in the proximal blood-pressure. This in turn calls for a compensatory mechanism to moderate the flow through the upper half of the body, and in fact the forearm flows are normal. The hypertension, however, usually contributes to the patient's death, which may be due to cardiac failure, subarachnoid hæmorrhage, or rupture of the heart or aorta: but a few succumb to bacterial endarteritis, usually affecting the aorta just below the coarctation.

The diagnosis of coarctation, provided the condition is kept in mind, is usually simple. The finding of a high blood-pressure, especially in a patient of good—or even superior—physique should lead to palpation of the femoral pulses, which are always diminished and often absent. The femoral pulse, when present, is delayed, compared with the radial pulse, mainly owing to the slow rise in the pulse wave; the very slight lag occasioned by the longer collateral route is imperceptible.[2] This diminution of the pulse wave, however, does not mean that the blood-pressure in the legs is very low.

Direct measurement from the femoral artery shows that, though the pulse pressure is small, the mean pressure is lowered by no more than 10–15 mm. Hg and always by much less than the reduction in systolic pressure, which may be 80–100 mm. Hg. This is because the pulse wave is heavily damped by the resistance of the collateral vessels and the distensibility of the distal aorta. The position is analogous to that in patients with a collateral circulation around a thrombosis of a large artery; EDHOLM et al.[6] have found that in the affected limb the flows and pressures are relatively normal.

The drop in pulse-pressure may silence the Korotkoff sounds, thus making it impossible to take the blood-pressure by the auscultatory method and reinforcing the mistaken impression that the leg pressures are very low. Many other clinical signs of coarctation have been described, but though they may occasionally draw attention to the condition they add little or nothing to the certainty of the diagnosis. Perhaps the most valuable of these additional signs is the presence of dilated collateral vessels over the back; but these are not always visible and are seldom definite in patients under the age of 10 years. Occasionally murmurs are audible; but they are not usually a prominent feature and are certainly of no diagnostic importance.

Radiology plays little part in the diagnosis of coarctation, since this can be so readily established by clinical examination, but occasionally notching of the ribs may draw attention to the disorder. The notches, which are on the inferior margins of the ribs, are due to the elongated and tortuous intercostal arteries as they participate in the collateral circulation by bringing blood from the shoulder-girdle and chest wall back into the aorta. (The first one or two ribs are not affected since their intercostal arteries arise from the subclavian artery—i.e., above the coarctation.) For many years this appearance has been regarded as pathognomonic of coarctation. It is not found, however, in every case, and is seldom distinct in patients under 10–12 years of age. In a few cases notching has been seen in congenital cyanotic heart-disease,[7] and it may also develop after a successful attempt to increase the pulmonary circulation by establishing pleural adhesions.[8] It is usually best seen in the middle ribs and is clearest about 2–3 inches lateral to the spine. It should not be sought along the necks of the ribs, as these areas so often appear wavy. The heart shadow may be rounded or globular but is not usually much enlarged, and if left ventricular enlargement is pronounced aortic reflux should be suspected. The aortic knuckle may be absent; but just as often there are too many "aortic knuckles," from shadows thrown by the kinked subclavian artery and by the dilatation of the aorta above and below the constriction. The site of the coarctation is not easily displayed by plain radiography; but it may sometimes be demonstrated in lateral or oblique tomograms, or by careful examination with a barium swallow.[9] Not infrequently the appearances are complicated by the presence of an aneurysm above or below the constriction, or arising from the narrowed segment itself or from an intercostal artery. Angiocardiography should always be done before the patient is operated on, since this may show the length and calibre of the narrowed segment and the disposition of the great vessels. Great caution is needed in interpreting the filling—or non-filling—of aneurysms, for the degree of filling is not always a reliable indication of the flow.[10] Adequate pictures may occasionally be obtained by intravenous injection; but direct aortography[11] gives shadows of much greater density and contrast, and this method should always be used.

Coarctation was first corrected surgically by CRAFOORD[12] in 1944, when he resected the narrowed segment and did an end-to-end anastomosis in a 12-year-old boy. Simple resection is still the operation of choice; but in certain circumstances, as GROSS[13] has pointed out, end-to-end anastomosis may be impossible, and then grafting with a length of human aorta may be the only way of bridging the gap. Many will think, with BROCK, that no-one should start an operation for coarctation unless he has a graft in his bag—it will not always be used. The graft need not be viable, as judged by tissue-culture; it seems to act

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7. Batchelder, P., Williams, R. J. *Radiology*, 1948. **51**, 829.
8. Barrett N. R., Daley, R. *Brit. med. J.* 1949, i, 699.
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11. Jonsson, G., Broden, B., Karnell, J. *Acta Radiol., Stockh.*, suppl. 89.
12. Crafoord, C. *J. thorac. Surg.* 1945, **14**, 347.
13. Gross, R. E. *Ann. Surg.* 1951, **134**, 753.

merely as a scaffold into which new intimal and adventitial coats can grow. The best age for operation has not yet been decided. On the one hand, it seems that grafts do not grow with the rest of the body, and should therefore not be inserted until the patient is nearly full-grown and has a fully developed collateral circulation; while, on the other hand, degenerative changes may develop in the aorta and elsewhere during adolescence and thus increase the technical difficulties of the operation. Furthermore any unnecessary delay is undesirable since coarctation is a constant threat to life. Up till now the supply of grafts has been very limited and the surgeon has often had to wait until one is available, but the results of recent experiments on sterilisation and preservation of grafts have been most encouraging,[4 14] and it may be possible soon to establish a graft bank. It is not yet known whether such theoretical risks as shrinkage of the graft or, conversely, of aneurysm formation will be encountered in practice; but this uncertainty should not hinder work which has already provided brilliant short-term results. Delay may be fatal, and many surgeons can recall patients who have died while their names were on the waiting-list.

Vagaries of Intelligence

IT is widely believed that every child is served out with a limited quantity of intelligence, which—like the rest of him—can go on developing till it reaches the limit of its capacity, but which cannot otherwise be expanded. The mature intelligence is thus thought to bear a direct, possibly predictable, relation to the initial ration issued by heredity, just as the size of a Japanese pith flower which has expanded in water depends on the original size of the bit of pith. This practical and convenient assumption is backed by the intelligence quotient (I.Q.), which is taken to remain roughly stable throughout life. Many have criticised the reliability of tests for assessing the I.Q., and almost as many have thrown doubts on the underlying assumption; but these have had less publicity. On another page, Mr. A. D. B. CLARKE, PH.D., and Mrs. A. M. CLARKE, PH.D., bring fresh evidence that the assumption is untenable; and a group of papers recently published strongly support their contention that intelligence, far from being a fixed quantity, may vary considerably during a lifetime.

Mr. J. TIZARD, PH.D.,[15] discussing criteria of mental subnormality, deals first with weaknesses in our methods of testing. A child's performance in tests is by no means constant from one test to another; so when a group of children are tested and retested by a standard method, such as the Binet test, though the *average* I.Q. remains much the same, *individual* I.Q.s may vary considerably.

Thus in a test with a test-retest correlation of 0·9 on immediate retesting, and a standard deviation of 16 points, one child out of every three who gained average scores of 100 on the first test would, on being retested, score above 107 or below 93 because of "errors of measurement"; and one out of every ten children with average scores of 100 would score above 112 or below 88 on the second test.

An I.Q. of less than 70 is very widely accepted as evidence of mental subnormality—sometimes on the basis of a single test. It seems that one child in three who scored 80 at a first test might, at a second test, fall into the subnormal group. Again, early revisions of the Binet test were believed to have a standard deviation of 12–13 points; and an I.Q. of 70 points thus fell about $2^1/_2$ standard deviations below the mean, and cut off 1% of the population. On some recently devised tests, however, the standard deviation is nearly twice as much; and an I.Q. of 70 falls just over one standard deviation below the mean, and so cuts off 10% of the population. Another difficulty is that the standard deviation sometimes varies for children of different ages.

Thus the 1937 revision of the Stanford-Binet test has standard deviations varying from 13 points at the age of six to 20 points at the age of twelve; and an I.Q. of 74 achieved by a six-year-old on this test is thus equivalent to an I.Q. of 60 achieved by a twelve-year-old.

TIZARD also points out that even if scales for measuring intelligence were absolutely reliable—in the sense that qualified observers would agree perfectly about each person's standing on the scale—it would still be impossible to predict infallibly the subsequent performance of those tested; for our present tests give only one point on a curve of growth and development, and "the slope of the curve is not the same for all individuals." Many studies have been published about this fluctuation in performance. He quotes the findings of HONZIK, MACFARLANE, and ALLEN[16] that tests of two-year-olds predict performance at the age of five to an extent little better than chance; and though prediction improves as the age of the child rises it is always hazardous.

In a given group of children the I.Q. changed, during the growing period of six to eighteen years, by as much as 30 or more points for 9% of the group, by 20 or more points for 33%, and for 15 or more points for 60%; it changed less than 10 points for only 15%. Thus for one out of every three children a prediction made at a six-year-old test would be wrong by 20 points at the age of eighteen.

As CLARKE and CLARKE say, "it is clear that in the general population the concept of a rigidly constant I.Q. is contradicted by the facts; I.Q. constancy over long periods of time during the years of mental growth is the exception rather than the rule." Some findings reported by Dr. NANCY BAYLEY,[17] from the Institute of Child Welfare at the University of California, bear on this.

A study was made of a group of adults of superior intelligence, who were tested by a "concept mastery" test designed by members of the Terman gifted study group at Stanford, and tested again twelve years later. Changes in scores between the two testings were compared on the basis of scores in the final test, sex, age-group, educational level, occupational status, and estimates of general "success"; and some individuals in each of these classifications had improved their score over the first testing, among them the two oldest people in the group—who, moreover, scored higher in both tests than the group averages.

Whatever may finally prove to be the predictive accuracy of intelligence tests for adults, those available for testing young infants, even when they are carried out by an experienced and informed tester, certainly have none. Prof. JEAN WALKER MACFARLANE, PH.D.,[18] who has studied the value of such tests for predicting the performance of children who are to be

14. Hufnagel, C. A., Eastcott, H. H. G. *Lancet*, 1952, i, 531.
15. *Bull. World Hlth Org.* 1953, **9**, 423.
16. *J. exp. Educ.* 1948, **17**, 309.
17. *New York Times*, Sept. **6**, 1953.
18. *Bull. World Hlth Org.* 1953, **9**, 409.

adopted, also finds that the predictive value increases with the age of the child; thus for children aged nine years or over performance at eighteen can be predicted fairly accurately for six or seven out of ten—though this is too late for most would-be adopters. But the fact is that the tests are influenced by many things besides the child's intelligence and its developmental curve—by his growth-rate, moods, physical well-being, freedom from anxiety, liking for the examiner, and willingness to coöperate in the test. "Test performance," as MACFARLANE says, "measures the level of functioning, which indeed has as one of its elements intellectual capacity or potential." Perhaps the growing use of such tests is encouraging us to place too high a value on intelligence. Many other factors go to make a useful man; as TIZARD puts it: "Intellectual and temperamental qualities, for example, are not closely associated with each other; nor is school success necessarily a good predictor of occupational adjustment." Thus the performance of a brilliant man may be hindered or completely overthrown by his temperamental or emotional defects; while a duller man who is easy in himself and with others may far outstrip his achievement.

We have no clear idea of the effects of education on intelligence; but it evidently has far more influence than the concept of the stable intelligence quotient suggests. TIZARD quotes R. S. WOODWORTH as saying: "radical differences in education can create substantial differences in intelligence, as far as intelligence is measured by our tests." Studies of normal children have shown, in some, consistent upward or downward trends in I.Q. over periods of years, some of the changes amounting to as much as 50 points; while mental defectives taken from a bad environment, and placed in a better, show a gain in intelligence, as measured by the I.Q. CLARKE and CLARKE, in their experiment with 59 mentally subnormal patients, illustrate this fact again; and in a further 11 cases they were able to show that a history of a bad or a good home probably has a predictive value for the child's future progress. They ask whether such relatively spontaneous changes can perhaps be accelerated and improved. Their findings are, at all events, a good argument against a too rigid segregation of patients according to mental level: the introduction of a few brighter children into a ward of low-grade imbeciles can produce remarkable advances in some who have seemed incapable of improvement. Incidentally, the proportion of feeble-minded children who grow up into essentially normal adults is always high—about half to three-quarters in most studies. A study made over fifteen years of 206 adults who as children had been classified as mentally subnormal showed that over 80% were self-supporting, 80% were married, and 80% of these had children. The number of children per family was slightly less than the national average, and their mean I.Q. was 95.

Genetics has as yet no clear message for us on this difficult problem. Prof. L. S. PENROSE [19] points out that eye, hair, and skin colours, stature, length of life, personality, and mental ability are each dependent on more than one gene; and the same applies to abnormal behaviour traits such as the common psychoses, epilepsy, psychoneuroses, and mental deficiency. Moreover, the definitions of such characters as insanity, criminality, and mental defect are largely based on social standards which vary enormously in different cultures. "It is very difficult," he says, "to separate the genetical from the environmental sources of variation in these traits." Adoption produces an experimental situation in which the effects of changed environment can be critically studied. Certainly we are not safe in making predictions about the intelligence of children from the study of one or other of the parents.

SKODAK and SKEELS, quoted by MACFARLANE, tested 63 children raised in foster homes, and also their true mothers. Only 20% of the mothers, as against 71% of the children, had I.Q.s over 100; and of 12 mothers with I.Q.s below 70, one had a child with an I.Q. above 120, and all but one of the rest of the children had I.Q.s over 70. In another study of 269 family groups comprising nearly 1000 people JONES and CONRAD found that there is a statistically significant relation between the intelligence of parents and children, so that a prediction can be made with confidence for two or three out of every ten children. This is certainly better than chance, but is not of much practical use, since it is presumably impossible to know in advance to which two or three out of the ten it applies.

Taking it all round it looks as though fears that the differential birth-rate is causing a decline in the national intelligence are premature, being conceived in too simple a spirit. There is a great deal of work to be done on the normal fluctuations of intelligence at different ages, under stress, and in different educational and emotional environments before this vexed question can be debated in an informed way. It may even turn out that intelligence is less like a Japanese water-flower than a balloon, which expands as it is stretched.

19. *Ibid*, p 417.

Annotations

AFTER OPERATION

IN his Harveian oration to the Royal College of Physicians last week Dr. George Graham departed from precedent by showing charts; and though his review of the Value of Physiology in Medicine began with the past it ended well ahead of the ordinary hospital practice of today.

His main theme was the application of physiological knowledge to the care of patients after operation, and particularly the need to meet deficiencies of potassium. The first step in the treatment of postoperative shock was taken, he said, when Sydney Ringer in 1882 discovered that the frog's heart could be kept beating with isotonic saline solution made up with tap water but not with distilled water. ("Physicians have expressed contempt for results that come from the pithed frog; yet the frog has been of great value to medicine.") It is now known that the more severe an operation, the more potassium leaves the muscles; and the loss of potassium from tissues and blood may produce the syndrome which Whipple in 1923 called pancreatic asthenia. Symptoms and signs of potassium deficiency include muscular weakness, abdominal distension, ileal stasis, cramps, nausea, vomiting, lethargy, apathy, and depression, with characteristic electrocardiographic changes. These effects can and should be prevented, in debilitated potassium-deficient patients who are to undergo major operations, by preoperative treatment. But injudicious postoperative administration of potassium can easily cause poisoning; and skilful steering is needed to avoid the Charybdis of deficiency without running on to the Scylla of excess. Skill is required because the signs caused by excess, though not so clear-cut as those of

deficiency, are by no means dissimilar: thus weakness of the limbs betokens too little potassium while true paralysis betokens too much—a situation resembling that in diabetes where the patient in coma may be suffering from either too little or too much insulin. The risk of poisoning is reduced by always administering glucose at the same time, and potassium should never be given in the first 24–30 hours after operation (when the blood-potassium level may be high), or at night unless some senior person is at hand to interpret any change in the patient's condition. In fact Dr. Graham believes that the proper application of physiological knowledge to maintaining the electrolyte balance of any patient who has undergone a severe operation needs the joint efforts of the surgeon and a physician, both with physiological instincts and a knowledge of cardiology, and of a biochemist—besides the registrar, the house-surgeon, and well-trained nurses. On the principle "if preventable why not prevented?" this challenge from a senior physician, speaking from the seat of Harvey, is one that cannot be ignored.

TUBELESS GASTRIC ANALYSIS

FOR many patients a fractional test-meal [1] is rather an ordeal, even when expertly carried out; and any reliable method of gastric analysis that does not call for the passage of a gastric tube must command attention. Segal and his fellow-workers [2 3] in 1950 devised an elegant tubeless technique for detecting achlorhydria. This depends on the power of the hydrogen cation (H^+) of the free hydrochloric acid of the gastric juice at a pH of 3 or less to displace the quininium cation (QH^+) from a quininium-resin compound. When this compound is ingested the quinine hydrochloride formed is rapidly absorbed from the small intestine and quinine is excreted in the urine within 15 minutes. The quinine can be rapidly and simply estimated by a simple method based on its fluorescence in ultraviolet light.

This method has been reported on favourably in the U.S.A. [4 5] and has been carefully studied in this country by Harkness and Durant.[6] In 200 subjects the method was compared with an alcohol or alcohol-plus-histamine test-meal. Comparison was impossible in 20 instances—in 13 the alcohol test-meal was unsatisfactory, and in 7 the quininium-resin method failed. The failures of the alcohol test-meal were the more numerous, and the more difficult to correct since the fault lay in the patient's condition (gastric hæmorrhage, persistent vomiting, refusal to swallow the tube, &c.). The tubeless analysis by contrast had 4 failures arising from nursing errors, administration of the resin, and collection of urine; and these tests were later repeated successfully. In 3 patients, however, difficulties in the control of micturition made the test impossible. An excellent measure of agreement was found between the two methods in the assessment of achlorhydria. It was found that excretion of 27 mg. or more of quinine indicated the presence of free acid. Even with achlorhydria, some quininium is released from the resin, because other ions, besides the hydrogen ion, displace the quininium. These other ions include sodium and potassium, which are normally present in the secretions, and, more important, aluminium, calcium, barium, iron, and kaolin—substances which are commonly included in medicines for patients with gastric disorder or anæmia. Anomalous results were obtained unless such medication was stopped at least two days before the test. Twice a positive reading was obtained in a patient with a partial gastrectomy in whom two alcohol-plus-histamine tests showed achlorhydria; but this is really understandable, because of the variable factor of regurgitation through the stoma of neutralising juices from the duodenum and jejunum. Malach and Banks [4] found a good correlation in 9 patients who were studied after gastric resection. A false-negative result may be found when defective renal function impedes excretion of quinine; and this invalidated the test in 3 cases of the series reported by Harkness and Durant. In patients with peptic ulcer one would not expect complete agreement between the alcohol and quininium-resin technique. Watkinson and James [7] noted from 24-hour gastric analyses that free hydrochloric acid was detected in no less than 10 out of 12 patients who had achlorhydria according to the usual histamine tests. In contrast, however, complete anacidity was found throughout the day in patients with addinsonian anæmia.

A serious disadvantage of the tubeless gastric analysis is that it does not indicate the level of acid secretion—Harkness and Durant found no correlation between the levels of excretion and the amount of acid judged by the test-meal. But this disadvantage might be overcome through studies on the rate of acid secretion. As Avery Jones [8] has observed, this new test may be useful in the investigation of patients with suspected addisonian anæmia, but it is unlikely to have any other serious indications. Even test-meals have only a limited value in the investigation of dyspepsias, but in the diagnosis of carcinoma of the stomach the appearance of the gastric juice may provide a useful clue.

"WITH A BLUSH RETIRE"

IN one of his tales of the future, Kipling made a woman remark, in the pride of her youth, "I'm only forty." By this stroke he indicated a complete reorientation to the question of age: people in that coming time expected to live to round about a hundred. We—their ancestors, in a manner of speaking—are perhaps making the first move towards their adjustment: we are trying to accustom ourselves to an expectation of life, at birth, of 66 for men and 71 for women; and since this average is affected by the mortality at younger ages, and especially the infant and neonatal mortality, many of us are going to live a good deal longer than that. Moreover, since the forces tending to keep us alive are to a large extent the same as those operating to keep us well, many of us will feel fitter than did aged people in the past. There is no escaping the truth, however unpalatable, that more can be expected of us than of our forefathers. In their first report, the National Advisory Committee on the Employment of Older Men and Women [9] make this point afresh, recalling the good reasons we now have for believing that many men could go on working after 65, and most women after 60, and emphasising three excellent reasons why they should. Greater length of life, of course, is one reason, and the rising proportion of older people in the community is another; the third is the country's need of workers.

The committee found themselves handicapped, however, by lack of information in making estimates of the numbers who might postpone retirement given the opportunity for further work. At present some 400,000 men aged 60–69, and some 250,000 over 70, are going on working. These represent just under half the total number in the 60–69 age-group, and about a quarter of those over 70. Over 100,000 in the unoccupied group aged 60–69 are chronically sick and unable to work, but that leaves a further 350,000 who might possibly return to work given encouragement. We need to know what kinds of encouragement; and the Ministry of Pensions and National Service are now inquiring into the reasons

1. See *Lancet*, July 11, 1953, p. 73.
2. Segal, H. L., Miller, L. L., and Morton, J. J. *Proc. Soc. exp. Biol., N.Y.* 1950, **74**, 218.
3. Segal, H. L., Young, H. Y. *Gastroenterology*, 1950, **16**, 380.
4. Malach, M., Banks, B. M. *New Engl. J. Med.* 1952, **247**, 880.
5. Becker, F. P., Maslon, M. *Ibid*, 1953, **249**, 68.
6. Harkness, J., Durant, J. A. *J. clin. Path.* 1953, **6**, 178.
7. Watkinson, G., James, A. H. *Clin. Sci.* 1951, **10**, 255.
8. Avery Jones, F. See *Lancet*, Oct. 10, 1953, p. 762.
9. London: H.M. Stationery Office. Cmd. 8963. 1953. Pp. 62. 2s.

why people of pensionable age retire or stay at work. It is possible, of course, to guess at some of them: lack of the chance to continue, and a feeling of having done enough already, are two likely deterrents. Many women do two jobs for part of their working lives—a paid job of some kind and the job of housekeeping for their families. They probably accept with relief the chance to take a pension and do only one. There are other difficulties about increments to pensions, which we reviewed fully last year.[10]

A fixed retiring age is not common among manual workers, but is often applied to clerical and administrative workers, and has led to a widespread feeling that retirement at such an age is a right. There is no medical reason to support the fixed retiring age; on the contrary. Firms hesitate to change or vary the age, however, because of difficulties about promotion of junior staff. The committee insist that it is time to review all these difficulties and get rid of some of them. The criterion for employment should be ability, not age.

They have studied more fully than has been done before the obstacles facing the older professional people who want to go on working. These may be encountered long before retiring age: a typical case is that of the officer leaving the Forces in his forties, who may apply in vain for post after post. Employers are chary of appointing him, sometimes because there are actuarial difficulties about latecomers to pension schemes, sometimes because they are diffident about asking an older man to take lower pay than his qualifications seem to demand, or conversely fear that he may not be worth the pay appropriate to his age. There are also traditional reasons—a custom of recruiting only school or college leavers, an ill-founded belief that older dogs cannot learn new tricks. There is evidence that the middle-aged and elderly are more adaptable and trainable than is commonly thought, and that they are more reliable and less accident-prone than the young. The numbers in the professions who are adversely affected in this way are not perhaps great, but they represent a waste of ability and expensive training. In general the committee urge that firms should modify their rules so as to be able to admit the occasional late entrant and to keep on the efficient older worker after he has reached what they earnestly request should now be called the *minimum* age of retirement.

POLIOMYELITIS VACCINATION TRIALS

SIX months ago we discussed[11] some preliminary trials of poliomyelitis vaccines. At that time Salk[12] had reported the results of vaccinating 161 persons with inactivated vaccines prepared from tissue-culture virus. These preliminary results were encouraging; there were no ill effects from the vaccination, and many of the volunteers developed antibody to all three types of poliomyelitis virus. Recently, Salk[13] stated at a meeting of the American Academy of Pædiatrics that 637 children and adults have now been vaccinated with several experimental vaccines, and again the vaccines appear to be safe and capable of stimulating the production of antibodies. After Salk's statement a spokesman of the National Foundation for Infantile Paralysis reported that ambitious plans were under way for testing the protective powers of poliomyelitis vaccines. Trials are being planned for early in 1954 and it is expected that several hundred thousand children will be vaccinated.

While it is encouraging to see rapid progress in this important work, many people will be disturbed at the huge scale of the projected trial. It is possible that the risks of a trial of this kind are very small, but there has been little time or opportunity to find them out. The production of a few hundred thousand doses of vaccine involves the growth of all three types of poliomyelitis virus in tissue-cultures of monkey's kidney, and the viruses must then be inactivated by formaldehyde in such a way that they lose all infectivity but retain their immunising potency; and the time available for these exacting preparations seems short. Moreover, a trial on this scale will be much publicised and the public will expect the vaccines to protect against paralytic poliomyelitis and produce no ill effects. If they do not completely justify these expectations, there is a risk that the public's view of poliomyelitis vaccination may be prejudiced for some time to come.

10. *Lancet*, 1952, ii, 767.
11. *Ibid*,, 1953, i, 777.
12. Salk, J. E. *J. Amer. med. Ass.* 1953, **151**, 1081.
13. See *New York Times*, Oct. 10 and 11, 1953.

SEX CHROMATIN AND HERMAPHRODITISM

THE disorder in normal sex differentiation of the human embryo which leads to hermaphroditism is unknown. Both sex chromosomes and autosomes carry genes which influence gonadal differentiation; but it is uncertain whether the development of the accessory sex organs in man is determined thereafter by the sex hormones of the fœtus, by its genic constitution, or by a combination of the two.

In the absence of knowledge of its causation, hermaphroditism has been classified on an anatomical basis, taking into account the histological appearances of the gonads and the morphological anomalies of the internal and external sex organs. The true hermaphrodite, in whom both ovarian and testicular tissue are present, is rare; but pseudohermaphroditism (classified as "male" or "female" according to whether the gonads are testes or ovaries) is not so uncommon, and its prevalence in the population has been estimated to be as high as 1 in 1000.[1] The rearing of these infants, however, is often—and understandably—at variance with their gonadal sex. Many of the more severe cases of female intersex anomaly—which are usually associated with adrenal overactivity—are raised as boys, and intersex males with purely feminine external genitalia are invariably raised as girls. Where the external anatomy is of equivocal sexuality, considerable difficulty in attributing sex may arise; and Williams[2] suggests that equivocal cases are best treated as boys.

The shortcomings of present methods of classifying hermaphrodites have led Moore and his colleagues[3–5] to develop a method of determining sex which is independent of the morphology of the sex organs. Making use of Painter's observation[6] that sex chromosomes show histologically a characteristic deep-staining property, they investigated the stained appearances of cell nuclei in the cat. Nerve-cell nuclei were first chosen for observation because of their large size and clear structure, and it was found that in stained material from the female cat a distinctive chromatin mass near the nucleolus was visible with an oil-immersion objective in a high proportion of cells, but was rarely seen in the nerve-cell nuclei of male cats. This sex difference was found in the cell nuclei of the other tissues and organs of the cat, and also in a number of other mammalian species, including man. Moore et al. suggest that this "sex chromatin" is derived from the sex chromosomes, and that the fusion of the two heterochromatic X chromosomes in female cells gives rise to a mass of deeply staining chromatin which is readily visible. The lack of distinguishable sex chromatin in the male is attributed to the small size of the Y chromosome, the XY combination resulting in a chromatin mass too small to be recognisable as an intranuclear entity. Applying

1. Young, H. H. Genital Abnormalities, Hermaphroditism and Related Diseases. Baltimore, 1937.
2. Williams, D. I. *Brit. med. J.* 1952, i, 1264.
3. Moore, K. L., Graham, M. A., Barr, M. L. *Surg. Gynec. Obstet.* 1953, **96**, 641.
4. Barr, M. L., Bertram, L. F., Lindsay, H. A. *Anat. Rec.* 1950, **107**, 283.
5. Graham, M. A., Barr, M. L. *Ibid*, 1952, **112**, 709.
6. Painter, T. S. *Amer. Nat.* 1924, **58**, 506.

this observation to man, these workers were able, by studying stained sections of skin biopsy specimens, to infer correctly the sex of 70 normal people. They tentatively suggest that skin biopsies from intersex individuals may indicate the "dominant sex," and cite two such cases in which the chromosomal sex tallied with the nature of the gonads. Moore et al. suggest that investigation of the nuclear sex chromatin in a series of known cases of hermaphroditism may establish a relationship between the type of intersex anomaly and the chromosomal sex of the subject, and perhaps throw light on the ætiology of the condition. At any rate, as a diagnostic measure this ingenious method may prove of considerable value, especially in infants.

ANOTHER NEW ANTIBIOTIC

A VERY wide range of organisms are attacked by the antibiotics now in common use; and additions to the list are valuable usually as a second line of attack when organisms have become resistant to the usual antibiotics. The latest addition is carbomycin.

Carbomycin is produced by a soil actinomycete, *Streptomyces halstedii*.[1] It is a crystalline monobasic substance, containing carbon, hydrogen, and nitrogen, with a molecular weight of about 860. It is sparingly soluble in water, although salts such as the hydrochloride and sulphate are water-soluble. The antibacterial spectrum of carbomycin closely resembles that of erythromycin, although against the majority of sensitive strains erythromycin is the more active, weight for weight. Both agents are active against gram-positive cocci and neisseria and to a lesser extent against strains of hæmophilus, but they are essentially inactive against the coliform group.[2,3] The pneumococcus and hæmolytic streptococcus are among the most sensitive bacteria in vitro, while staphylococci (including those resistant to other antibiotics) and enterococci are slightly less so. The activity of carbomycin against staphylococci resistant to other antibiotics indicates a possible use for the drug; but unfortunately these organisms readily become resistant to carbomycin in vitro. Furthermore, the development of carbomycin-resistance is accompanied by erythromycin-resistance.[3,4] There seems to be no cross-resistance, however, between carbomycin and penicillin, streptomycin, chloramphenicol, aureomycin, or oxytetracycline (terramycin).[4]

Reports of clinical trials of carbomycin are at present few, but preliminary results are not encouraging. Although the pneumococcus is highly sensitive to this antibiotic in vitro, the treatment of pneumococcal pneumonia with it gives very uncertain results. 31 cases were treated by Finland et al.,[5] who concluded that the results were "distinctly inferior to those observed with any of the antimicrobial agents currently recommended for use in these infections." Pneumococci disappeared rapidly from the sputum of only 3 patients; they were still present in the sputum of the remainder for up to ten days from the start of carbomycin therapy. Of 7 patients from whose blood pneumococci were isolated before therapy, 5 continued to yield positive cultures for up to six days. Clinically a "good effect" was considered to have been obtained in only 6 patients. Bunn and Cook[6] treated with carbomycin 8 patients with pneumococcal pneumonia. Of these 8, 4 responded satisfactorily, and in another the condition cleared after six weeks; while the remaining 3 were classed as "clear-cut treatment failures, bacteriologically and clinically." Blood-cultures were still positive forty-eight hours after the start of therapy in 2 of these patients.

If infections caused by highly sensitive organisms respond poorly to carbomycin, the hope of benefit in those caused by less sensitive bacteria, such as *Staphylococcus aureus*, is very small. Hewitt and Wood[4] treated 9 patients with *Staph. aureus* infections (3 pneumonia, 2 bacterial endocarditis, 1 carbuncle, 1 skin sepsis, 2 urinary-tract infections). The blood-culture of one patient with endocarditis became negative, but after five days the patient died from cerebral embolism. Carbomycin therapy also caused complete resolution of the abscesses of the patient with skin sepsis. No effect, however, was observed in any of the other 7 patients. Similarly, Finland et al.[5] observed no change in a patient with staphylococcal empyema treated with carbomycin, or in a patient with staphylococcal pyelonephritis and bacteriæmia. Brief reports of the value of carbomycin in other bacterial infections are no more encouraging.

It seems, then, that carbomycin is unlikely to take an important place in the treatment of bacterial infections. Clearly it should never be the first choice for serious infections, since it might deprive the patient of an antibiotic known to be effective. As a second choice, however, for patients who fail to respond to the usual antibiotics, carbomycin may occasionally be of value.

CEREBRAL ANGIOMA

INCREASING use of carotid angiography has focused attention on arteriovenous angiomas of the brain; and the observations by Olivecrona and Riives,[7] in Sweden, on the possibilities of operative removal of these lesions has made their recognition of more than academic importance. The common symptoms are epilepsy, subarachnoid and intracerebral hæmorrhage, focal cerebral signs, and headache. Mackenzie[8] has studied in detail the early manifestations in fifty cases. Similar lesions are found around the mid-brain,[9] but he has confined his attention to supratentorial angiomas.

Arteriovenous angiomas are congenital lesions; but, as Olivecrona has shown by angiograms repeated at an interval of ten years, they may increase in size, while symptoms may also be exacerbated by complications such as hæmorrhage and possibly thrombosis. In Mackenzie's series the first symptom arose before the age of 30 in 70% of cases and during the first decade in 10%. Although headache was a common early symptom, it was usually epilepsy or an intracranial hæmorrhage that drew attention to the presence of a serious lesion. Epilepsy was the presenting symptom in 16 patients, and in all except 1 of these there were focal features in some or all of the attacks; these features were usually recognised by the patient in the early stages of the fit, but in a few instances a witness's account was needed. In some of these patients there was transient hemiparesis or dysphasia after the fits; and by the time they came under observation at hospital 11 had permanent focal signs. In 15 patients the first indication of the lesion was an intracranial hæmorrhage; usually this was both subarachnoid and intracerebral, but in 3 cases it was apparently into the brain substance alone without leakage into the subarachnoid space. With the almost routine use of carotid angiography in patients who have had a subarachnoid hæmorrhage, arteriovenous angiomas have been identified as the source of bleeding in about 10% of cases.[10] The clinical sequence of subarachnoid hæmorrhage followed by epilepsy may occasionally arise from intracranial aneurysms but should suggest the possibility of an angioma; the opposite sequence of epileptic attacks followed by a subarachnoid hæmorrhage is, however, extremely rare with aneurysms and is

1. Tanner, F. W., English, A. R., Lees, T. M., Routien, J. B. *Antibiotics Chemother.* 1952, **2**, 441.
2. Welch, H., Randall, W. A., Reedy, R. J., Kramer, J. *Ibid*, p. 693.
3. Finland, M., Wilcox, C., Wright, S. S., Purcell, E. M. *Proc. Soc. exp. Biol., N.Y.*, 1952, **81**, 725.
4. Hewitt, W. L., Wood, J. P. *New Engl. J. Med.* 1953, **249**, 261.
5. Finland, M., Purcell, E. M., Wright, S. S., Love, B. D. *Ibid*, p. 310.
6. Bunn, P. A., Cook, E. *Arch. intern. Med.* 1953, **92**, 333.
7. Olivecrona, H., Riives, J. *Arch. Neurol. Psychiat.* 1948, **59**, 567.
8. Mackenzie, I. *Brain*, 1953, **76**, 184.
9. Wyburn-Mason, R. *Ibid*, 1943, **65**, 163.
10. Falconer, M. *Proc. R. Soc. Med.* 1952, **45**, 299.

highly suggestive of an angioma. Severe headache without special characteristics was a common symptom in the Swedish cases; and Mackenzie noted it as the presenting feature in 12 of his 50 patients. He found that in some patients it had some migrainous features; but in retrospect it could usually be differentiated from constitutional migraine since the unilateral headache tended always to be felt on the same side of the head (the side of the angioma), while commonly in migraine opposite sides of the head are involved in different attacks. The most characteristic sign of a cerebral arteriovenous angioma is an intracranial bruit. A bruit is occasionally heard over a highly vascular cerebral neoplasm or in patients with Paget's disease of the skull, but usually it indicates a vascular malformation. The bruit may be faint and intermittent and at times is better heard over the eyeballs than over the skull. Olivecrona recorded a bruit in only 25% of his first series of cases,[11] and did not regard it as a very important diagnostic sign. In Mackenzie's patients a bruit was heard in 24 of the 48 patients in whom it was sought. It was relatively less common in patients in whom an intracranial hæmorrhage had occurred, the probable reason being that the more deeply situated angiomas tend to bleed. In a suspicious case careful and repeated auscultation of the skull and eyeballs is certainly worth while, but the absence of a bruit in no way excludes the diagnosis of angioma.

Other physical signs are variable; sometimes motor and sensory hemiparesis or hemianopia are found, and such signs are especially common after an intracerebral hæmorrhage. Olivecrona suggested that in the presence of these signs without a history of massive hæmorrhage the cause might be thrombosis or anoxæmia of cerebral tissue due to most of the relevant blood-supply being shunted through the angioma; while Mackenzie believes that small hæmorrhages may take place and destroy cerebral tissue. The diagnosis is finally made by carotid angiography; and surgical treatment must always be preceded by this investigation, which reveals the source of the angioma's blood-supply.

MOTHERCRAFT TRAINING IN PRISONS

TRAINING in parentcraft begins at birth, for the adult's ideas on the way parents behave are inevitably grounded on the way his parents behaved to him. Not a few of the mothers sentenced for neglecting their children, and sent to the new hostel at Birmingham Prison for a training course in mothercraft, argue that they were convicted for something no worse than their parents did to them—without being sent to prison for it. This hostel has been in action now since February, 1952, and in their latest report[12] the Prison Commissioners are able to give a cautious account of the way it is working. Situated inside the prison grounds, in a building which used to be officers' quarters, it can receive 12 women at a time. These are sent from prisons all over the country, the only qualifications being that they should be of star class, able to fit well into hostel life, and with long-enough sentences for them to complete the course. Sometimes not enough women convicted of neglecting their children have been available, and then vacancies in a course have been filled by other star women prisoners who can profit from it.

The courses have been arranged by the Birmingham education authority, public-health authority, and children's committee, and have to be very simply planned; for as the commissioners say, "although the home conditions that led to the charge were usually appalling, this was often the result not of poverty but of wasteful and unintelligent spending, bad housing, which readily induces slovenly habits, unhappy marital relationships, or the low mentality and poor physique of the mothers." They return, on discharge, to the conditions in which they have already failed; so the aim of their instructors is to teach them to use whatever cooking equipment they have in their homes, and the elements of house-cleaning, sewing, washing, and ironing. Some cannot read or write, and so have to be encouraged to memorise their instructions. They are not particularly anxious, when they arrive, to learn anything. The chaplain of the prison, who gives a little account of these women, says that the teachers are confronted with an "appalling degree" of ignorance and idleness: but that they are not unduly discouraged by this. Most of these mothers grew up in surroundings where overcrowding, poverty, and broken marriages were commonplaces. Their standards have thus always been low; and as their own children came they have accepted a progressive decline, even in their own low standards. In one case, all bedding and all furniture had been sold—or returned to the hire-purchase firm—until nothing remained, and the family lived in the house on the floor with nothing in the way of furniture. But the women respond to training, especially when they have once had the agreeable surprise of finding that they too can do things decently. Nothing is a better tonic for the demoralised than a little success. It is interesting that few of the cases reveal any real degree of poverty: most of the mothers could have maintained their families on a modest but reasonable standard, and where there were many children the family allowances, properly spent, would have sufficed to feed them. The difficulty lies in the inability of the parents to put first things first—sometimes even in an unparental inability to put the children before themselves. The chaplain cites the cases of a family without bedding or warm clothing and with rent in arrears, where there was nevertheless a good wireless set; another where the children were underfed, but the father and mother afforded a night out every Saturday; and a third where the mother's first charge on the housekeeping money was 3*s*. 7*d*. a day for cigarettes for herself. Sometimes the father gave his wife too small a proportion of his earnings for housekeeping, and in two cases he had been long out of work; but in the main the trouble was a complete inability to spend wisely. The instructors have therefore taken great pains to teach the women how to budget for family spending. Squalid housing presents a more difficult problem, but the mothers are brought to recognise that rooms, however bad and crowded, can be kept clean, and probably warm. Overcrowding is the worst enemy of decent standards: when the children have to sleep on the floor because there is no room for a bed, dirt and dirty habits are almost inevitable. Drinking and gambling seem to be far less potent causes of child neglect than overcrowding: they are pursued, but not very recklessly among the English today.

The real test of the mothers attending these courses comes, of course, on their discharge. The Women's Voluntary Service are doing good work by appointing "friends" for those who want them, to stand by them when they return home. Even when they have asked for such a friend some of the women do not keep in touch with her; and though it is too early to assess the effects of the course, the W.V.S. reports suggest that some soon slip back into their old ways. No doubt this is because their circumstances are still too much for them; and the prison mothercraft course, though it has given them a better idea of what to work for, has naturally not been able to reconstruct their characters in a matter of a few weeks. What they probably need is the help of a family service unit for a few months, whose members could work with them in their own homes, and teach them to build on the foundations which the mothercraft course has so well and truly laid.

11. Bergstrand, H., Olivecrona, H., Tönnis, W. Gefässmissbildungen und Gefässgeschwülste des Gehirns. Leipzig, 1936.
12. Report of the Commissioners of Prisons for the Year 1952. Cmd. 8948: H.M. Stationery Office, 1953. Pp. 198. 6*s*.

Reconstruction

BASIC GROUP PRACTICE

HOW IT CAN BE DONE *

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IN two previous articles I suggested that basic group practice might solve many of the problems of general practice today and thus stabilise the National Health Service. In the second article I set out some of the practical details on which the success or failure of this type of practice depend. In this third article I propose to discuss what it costs to start and run a basic group practice, and how this kind of practice can be developed within the framework of the N.H.S.

Finance

My estimates of the capital costs and running expenses rest on a general knowledge of what this type of practice costs in places outside Great Britain, adjusted to the value of money in Britain today. They are overestimates rather than underestimates. I have based my calculations on the five-doctor group, which is probably the best size. Five-doctor groups are of course not practicable everywhere in Britain, but my figures can be scaled down for groups of four, three, and two doctors and for those working alone in rural isolation.

Thus I suggested that a five-doctor group should employ 2 nurses, 2 secretaries (1 acting as receptionist), and 1 relief nurse-secretary. For smaller groups the basic staff would be :

Four-doctor groups	2 nurses and 2 secretaries
Three-doctor groups	2 nurses and 1 secretary
Two-doctor groups	1 nurse and 1 secretary

or the equivalent of these in people who can interchange jobs, or part-time people who can work to a roster.

The cost of converting dwelling or business premises into a medical centre will vary with the local value of property. More often than not, premises will be rented or leased rather than bought outright. Once a suitable building has been found it can be radically adapted and the medical centre equipped satisfactorily—bearing in mind that much of the equipment will be contributed from the surgeries of the doctors of the group—at an initial cost of approximately £1000 per doctor, or £5000 for a five-doctor group. If the centre is to be built from the ground up, it will cost about £3000 per doctor, or £15,000 for a five-doctor group.

The heaviest running expenses are staff salaries and rent (assuming that the property is not freehold). The annual cost of salaries for a five-doctor group would be approximately :

2 nurses	£1000
1 secretary	£400
1 receptionist	£400
1 relief nurse-secretary	£300
	£2100

Rent will vary, but should not exceed £750 per annum on any reasonable lease. The other main expenses are :

Car maintenance	£1000
Telephone	£150
Stationery	£200
Journals, study allowance, society memberships, &c.	£500
Gas and electricity	£200
Insurance	£150
Depreciation at 5% (considered as a £5000 investment)	£250
Contingency fund	£100
	£2550
Staff salaries	£2100
Rent	£750
Total	£5400

Considering this against the gross income from a panel of 12,500 (estimated at £1 per head) the running expenses are about 42% of gross takings. This makes no allowance for income from sources other than capitation fees, or for mileage allowances for running cars. The running expenses of comparable groups which I have studied in other places were within the range of 30–50% of gross takings.

On this basis the net income to be distributed among the doctors working in the group is £8000, or £1600 per doctor. This figure should be a minimum net average, and can of course be considerably higher.

Framework Offered by N.H.S.

In its first five years the National Health Service has done little to stimulate the development of group practice. Hopes were centred at first on the possibilities of ill-defined and little-understood health centres ; but these hopes have only been fulfilled in two or three places, and by now have lost their charm both for the general practitioner and for the Exchequer. They are monuments to the local authorities and the outcome of a " do nothing " policy in regard to the main structure of general practice.

The capitation system of payment and the tax concessions offered to the individual general practitioner are both strong deterrents to the development of group practice. The capitation system subsidises quantity and penalises quality. Attempts have been made to adjust the original capitation fee, so as to equalise the remuneration of the small-list and big-list doctor. But the basic evil of the capitation system remains. According to elementary economics, payment by salary would be more equitable ; but most doctors resist strongly any suggestion of remuneration by salary, and this resistance has doubtless been strengthened by the generous provisions of the Danckwerts award.

The general practitioner is given generous tax concessions. Allowances for practice expenses, for his private home when the surgery is in the house, and for his car, &c., all make it advantageous for him to continue to practise alone, as he does today, on minimum actual expenses but maximum theoretical expenses.

Whether we believe that the doctor receives too little or too much of direct remuneration, or that his tax concessions are overgenerous or niggardly, we must, if we are honest, admit that it is to his financial advantage to resist any change in the present administrative structure which might (*a*) reduce the maximum size of his list or (*b*) make possible a closer scrutiny of the expenses on which he claims tax concessions. The present structure thus deters rather than encourages improvements in the organisation of general practice ; but since it is unlikely to be altered radically, we must try to devise, within this framework, means of stimulating, instead of deterring, better methods of practice.

Inducements

The first essential is that national funds be made available to doctors who wish to form group practices. The sum of £100,000 per year which has been set aside from the Danckwerts award is quite inadequate. As the N.H.S. is at present organised, it is hopeless to expect many doctors themselves to raise capital to establish a group practice ; and present banking controls make it difficult, even for the few who may wish to do so, to find the money.

The capital cost of a medical centre, which I have given above, is as low as possible, and an enlightened Ministry or Government, taking a long-term view, should look beyond this and aim at a construction (as distinct from a conversion) programme. To encourage group practice and to develop medical centres throughout the country I suggest the following scale of grants :

Size of group	*Capital grant*
Five-doctor	£10,000
Four-doctor	£7500
Three-doctor	£5000
Two-doctor	£2500
Single doctor (where no alternative is possible)	£1000

* The two previous articles appeared on July 4 and Sept. 19.

These grants, of course, must be tied to specific conditions, which will improve medical care, preserve professional autonomy, and yet permit the control necessary for spending public money. Some such conditions as the following might be suitable:

1. That groups will limit themselves to a maximum of 2500 patients per doctor.
2. That an additional sum not less than half the capital grant will be contributed by the doctors—i.e., every Government £1 will be matched by 10s. from the group.
3. The doctors will agree to:
   (*a*) Give a twenty-four-hour service.
   (*b*) Keep unit or family records on forms provided.
   (*c*) Make these records available for bona-fide research.
   (*d*) Allow medical auditing by regional specialists.
   (*e*) Take a minimum of two weeks' leave for postgraduate study annually.
4. All capitation fees will be paid to the group and not to member doctors.
5. The group will enter into a legally drawn-up partnership agreeing that:
   (*a*) A group leader shall be named.
   (*b*) The minimum share of the most junior partner will be not less than £750 p.a. and he will have the right of resignation, may be dismissed, or given full-term partnership status at the end of twelve months.
   (*c*) An annual sum of not less than £100 per doctor will be set aside for postgraduate studies, medical society memberships, &c.
   (*d*) The maximum amount of work permissible outside the group (defined in terms of time or earning) will be set out.
   (*e*) All professional earnings from extra-group sources will be pooled and distributed in terms of the partnership agreement.

Provided these general conditions are met, the agreement would permit payments in various ways—e.g., to the group leader for administrative responsibilities, or to a group member assuming special responsibilities for, say, obstetrics or research.

In my earlier articles I discussed the reasons for all these proposals, except the proposal that the doctors should themselves contribute half the capital. I have two reasons for proposing this. To be a shareholder in an enterprise is often considered an incentive to strive for success. Again, these contributions will relieve the strain on the Exchequer. The doctor's share should revert to the Government (by purchase on retirement or death of the original group members); otherwise a form of sale of practices would be reintroduced.

There are certain obvious objections to this, as to almost any other, plan for financing medical services. For example, why should one generation of doctors bear the burden of financing, even in part, facilities for future generations? On the scheme suggested above this is in effect what would happen; and, unless some form of sale of practices is to be reintroduced, there seems to be no alternative. Naturally the doctors who contribute funds to the construction of medical centres should receive a fair rate of interest on their money, which should be regarded by them and by the Government as any other national loan investment. There is no reason at all why one generation of doctors should subsidise another.

Perhaps, in these circumstances, the reintroduction of "sale of practices" would not be so bad, provided it was clearly established that it was sale of material facilities and not sale of "good will," as in the past. However, there would be many complications to any such scheme. For example, a medical centre built in 1953 would be more likely to depreciate than to appreciate by, say, 1963 (if the "good will" factor is excluded), and the doctor making the initial investment would find it difficult to recover his money, let alone enjoy a reasonable margin of profit on the capital he had had tied up for ten years. It may, however, be possible to work out some satisfactory scheme along these lines and so perpetuate the private-enterprise element, which some consider a stimulus to better work and greater effort.

Another plan would be for a local authority (instead of the doctor members) to contribute half (or an agreed fraction) of the capital, and this alternative would have much to recommend it. Thus for the price of Woodberry Down the London County Council could have backed some fifty basic centres housing 250 doctors and serving approximately 625,000 people. The value of this type of joint central and local government enterprise has been proved by the results of the Hill-Burton Grants-in-aid to Hospitals Act in the United States. Against such joint enterprise in this country is the general practitioner's mistrust of local authorities and his not altogether baseless fear of being dominated by them. But, if successful, this method of financing the centres could reconcile these two branches of medical service.

But maintenance costs as well as capital costs should be instruments of policy. It is not wise, in an endeavour to take maintenance costs into account, to overload a capitation allowance, pay excessive salaries, or provide a fee-for-service schedule which is impossible to control. The onus should not be on doctors, either individually or collectively, to limit their net incomes in order to improve the quality of the medical care they can offer. Who would now suggest that the research-worker should be left to buy his own equipment or the professor to pay the salary of his own teaching assistants? To do so would destroy the foundations of research and teaching, as it is at present undermining the foundations of general practice. At least the salaries of all medical ancillaries should be met from national funds and all record-keeping material should be provided.

I estimate the annual cost of salaries of ancillaries for the five-doctor group at £2100. With the addition of record-keeping materials, a subsidy of, say, £2500 should cover most of the running costs of the group. The group would of course be free to engage additional staff. Such a subsidy would reduce the expenses of the group to approximately a quarter of their gross takings, if the maximum number of patients per doctor was fixed at 2500, and would compensate for the drop in income which this limitation would cause. The maximum net income per doctor, from capitation fees alone, would then be about £2000.

Once the arrangements for setting up the practice are completed, the autonomy of the group would be sacrosanct. The Government's final administrative control would end with the signing of the partnership agreement.

Cost to the Nation

For a population of 50 million people, in which each doctor looked after 2500 patients, 4000 five-doctor groups (or the equivalent in smaller groups) would be needed. If all the general practitioners of the country decided to join the scheme at one fell swoop, the central Government would have to put down £40 million (£10,000 per centre). The doctors would have also to be paid off for their shares, amounting to £20 million, over the next twenty or thirty years. If these shares were held by local authorities, they would not of course have to be repurchased with central funds.

However, it is much more probable that, even with the inducements suggested, the rate of entry into group practice would be slow. It could be planned on, or even regulated and budgeted for, an eight-year period for example. This would mean £5 million in capital outlay per annum for eight years.

If a subsidy towards running costs of £2500 per annum per five-doctor group were offered, and there was an equal growth of groups over an eight-year period, the cost in the first year would be £1¼ million, rising by the same amount each year to a total of £10 million.

When the scheme was in full operation, general-practitioner services (in terms of doctors' incomes—capitation fees—and direct subsidy to running costs of group practices) would cost £60 million per annum. In

terms of the total N.H.S. budget and the importance of a good general-practitioner service this would not be disproportionate.

Administrative Problems

The biggest initial problem would be to set up satisfactory machinery for approving grants. Before any grants could be made, the Ministry of Health (or a professional committee appointed by it) would first have to approve the site, premises (plans for conversion or construction), and partnership agreements. This would need both central and regional bodies able to give sound advice on architecture, legal aspects, and organisation and staffing.

All registered doctors must be eligible to enter a group practice and apply for grants: there could be none of the picking and choosing among doctors to which academic and research bodies are inclined when they contemplate artificial developments along these lines.

Priority should be given to groups of the size most suitable for local conditions. That is to say, a five-doctor group should be given priority over a four-doctor or three-doctor group in a densely populated urban area, but not necessarily over a three-doctor or two-doctor group in a village.

After a trial year, a group which wanted to expand its membership (up to a maximum of five) should be eligible for an additional capital grant and staffing allowance up to, but not exceeding, the sum available for the larger group.

Once minimum standards were agreed, the administration of the scheme would be a big but not impossible task, and one which would grow less with the years. One of the greatest initial difficulties would be to encourage doctors to form groups of a suitable size, for there would be a natural tendency to try to form among friends groups of two or three rather than five. As inducements, five-doctor groups could be offered priority, larger grants, and more staff.

Once they have accepted the conditions set out above, the groups would be completely autonomous. The medical auditing of work within the groups would be done on a professional (as distinct from "Ministerial") basis, as it is in the better hospitals. Its purpose would be not to police and discipline the weaker brethren but to advise and help them.

The personal or family record card (supplied by the Ministry) should be standardised, so that it could be used for research. But it should be designed by general practitioners to meet the needs of general practitioners, and not by Ministry officials whose chief interest is administrative ease and technique.

General Comments

The financial and administrative programme I have outlined is revolutionary. But it is a revolution which could take place within the present framework of the N.H.S. It does not disturb established traditions—e.g., the capitation method of payment—and it would remove many of the more reasonable and substantial worries of general practitioners. Capital needed would be no greater than the sum conceded to general practitioners, as retrospective payment, by the Danckwerts award.

A scheme of this kind calls for a more flexible attitude to administration. It calls for a renunciation of the vague dreams of 1948 of health centres as a possible means of integrating the preventive and curative services and at the same time compensating local authorities for their hospitals. But more than anything else it means putting the patient first, above and beyond any considerations of administration or concessions to the doctors in the name of political harmony.

On the positive side, from where the doctor sits, basic group practice offers the general practitioner the chance to regain his prestige by improving his performance, and the opportunity to become in reality all he is supposed to be in theory.

The hard-headed financial expert might well ask, what can it offer in saving of cash, apart from the invaluable but intangible benefits of improving general practice? It is impossible to give a clear-cut answer to this question, but two points are worth considering:

(*a*) The better general practice becomes, the less work will fall on the hospitals, where the care of patients is most expensive.

(*b*) A large proportion of N.H.S. expenditure is for drugs and medicines. Overprescribing is an index of unsatisfactory medical care, particularly at the level of general practice, and there is no administrative way of controlling this properly. Even the largest American voluntary insurance schemes, with rigid administrative controls and limited scope, cannot afford to offer drug benefits. The man who signs the prescription, and no-one else, regulates the size of the drug bill of the nation. Better methods of general practice, particularly methods which allow the doctor more time to be with his patients, would probably reduce the rate of prescribing.

I believe that the saving in the drug bill which would follow the introduction of basic group practice would more than meet the cost of the capital grants and subsidies offered under the scheme.

Again, without group practice, and all that it implies, general-practice research can never return the dividends of which it is capable.

In the narrow sense, the N.H.S. is no longer a political issue. It is accepted by the people and by all political parties. It is from the doctors that the lead must now come, and it is to be hoped that the new College of General Practitioners and other professional organisations will outgrow their fear of mixing politics with medicine and recognise that medical economics and organisation are the instruments of policy and mean more than the size of doctors' incomes and the capitation fee. The finance and the organisation of general practice are now the politics of medicine in Great Britain.

Special Articles

HOW CONSTANT IS THE I.Q.?

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SINCE the early years of this century intelligence tests have been used as measures of general intellectual capacity, and an immense body of published work has grown up around the subject. Nowadays the intelligence quotient (I.Q.) is widely employed in educational, selection, and clinical procedures, and there is no doubt that intelligence tests provide a method more valid than subjective or clinical judgment in assessing a person's intellectual level. Not only is the I.Q. used as an estimate of a person's present intellectual status, but the additional assumption has developed that this remains sufficiently constant during the life of the individual for fairly accurate predictions to be made about his future ability. In other words, a person's intelligence at, for example, the age of 5, would be the same, relative to others of his age-group, at later ages; thus the young genius would always be a genius, the average child would always be average, and the defective would remain defective. Such are the implications of a belief in a constant I.Q., a belief which within broad limits seems to be in accord with common observation. Nevertheless, how broad such limits may be is of great importance at present, when the I.Q. is so widely used

in selection (e.g., of school-children at the age of 11); and in this paper we consider this point.

Mental Growth in Normal People

In the United States there have been many studies of I.Q. constancy which have as yet received little publicity in this country. It is not our aim to provide a comprehensive bibliography, but the few references given will enable the interested reader to trace several hundred researches bearing on the problem.

Nemzek (1933) and Thorndike (1940) summarise in all 359 studies carried out before 1940; and such researches show consistently that: (*a*) the predictive value of the I.Q. (as measured by test-retest correlation) decreases as the interval between the tests lengthens; and, as a corollary, (*b*) although the group or population average may not alter greatly, there will be considerable change of status of some individuals within that group (subsequent retests showing that to varying extents some subjects increase in I.Q., some decrease, and some remain constant); and (*c*) mental tests given to children during the preschool years have usually little predictive value, and that assessments during infancy have no relationship with later status (except of course in such clear-cut clinical entities as mongolism, microcephaly, and the like).

To illustrate the first two conclusions, the practical implications of commonly observed test-retest correlations may be considered. Reviews by Nemzek (1933), Thorndike (1933), and Thorndike (1940) have shown that retest correlations are rarely as high as 0·95, and that on *immediate* retest the most probable value is 0·9.

Shapiro (1951) demonstrates the implications of this second finding as follows: "Let us assume that we have a test with a test-retest correlation of 0·9 and a standard deviation of 16. These data mean that, out of every 3 children obtaining an average score of 100, one would obtain a retest score above 107 or below 93. On the basis of the same data, out of every 10 children obtaining an average score on the first test, one child would obtain a score above 112 or below 88 on the second test. (These illustrations assume that no learning has taken place.)"

I.Q. changes may, of course, occur for a number of reasons: errors of measurement as well as genuine alterations in the rate of intellectual growth may account jointly or separately for lack of perfect reliability.

Over time-intervals of several years, test-retest correlations are usually much lower than 0·9. Honzik et al. (1948) found a retest correlation of about 0·6 for a time-interval of 12 years, after following up a representative sample of urban children from infancy to the age of 18 years.

They tested over 150 children at the ages of 6 and 18, and found that the I.Q.s of 58% changed 15 or more points; the I.Q.s of 35% changed 20 or more points; and the I.Q.s of 9% changed 30 or more points. In only 15% of cases was the change 9 points or less. Individual I.Q. constancy over this period was thus the exception rather than the rule. The group averages, on the other hand, showed a maximum shift in I.Q., over this period, of only 5 points. The maximum I.Q. change for any individual was 50 points. Similarly, Hilden (1949) who is in process of studying the intellectual growth of 100 children, has reported findings on 30 of these examined from early childhood to late adolescence. In this small sample, too, individual variability in I.Q. was often found

Dearborn and Rothney (1941) have reported findings from the important Harvard Growth Study in which both mental and physical development in children were investigated over many years; their book gives results from many different researches on several hundred children. They conclude that "prediction of growth at various ages is extremely hazardous, but is particularly so during the period of adolescence . . . marked variabilitiy in individual growth curves appear throughout the course of the growth period. . . . The principle of individual variability goes right to the root of such problems as constancy of the I.Q. . . . We have established the fact that variability rather than consistency of growth is the rule, that prediction except for average of groups is extremely hazardous. . . "

To illustrate conclusion (*c*), namely that mental tests in the preschool years have little predictive value, Honzik et al. can again be cited.

Tests at 21 months correlate less than 0·1 with the results at the age of 18 years. Similarly, Bayley (1940) found that mental scores derived from tests at 7, 8, and 9 months, while correlating highly with scores a few months later, had a relationship in the region of zero with all measurements after the age of 30 months. Indeed, in at least three researches quoted by Jones (1946), small negative correlations were found between intelligence scores in infancy and test scores in later life. As age increases, however, so does the correlation with later intellectual status. Thus, Bayley (1949) found that for 27 children tested from infancy onwards, the correlations with the test score at the age of 18 years became positive from the age of 2, and by the age of 4 had become 0·52.

From the wealth of available data it is clear that, in the general population, the concept of a rigidly constant I.Q. is contradicted by the facts; I.Q. constancy over long periods of time during the years of mental growth is the exception rather than the rule. Moreover, this conclusion is based on the findings of researches in which individual rather than group tests were used for the most part; all that has been said applies with even greater force to group-tests (widely used for selection), which are in general less satisfactory than individual intelligence tests.

Intellectual Changes in Mental Defectives

The general thesis advanced above can be further illustrated by some work we have done recently with mental defectives. This has led us to ask: "How permanent is intellectual subnormality? Is 'once a defective, always a defective' true?"

In the past there have been several studies, almost exclusively of feeble-minded, non-organic defectives, in which I.Q. changes—often large—have been reported. Such writers as Burt (1947), McKay (1942), Roberts (1945), Spaulding (1946), Sarason (1949), and Guertin (1949) have described I.Q. increments, some as large as 43 points. These investigators, however, while offering various hypothetical explanations for the changes in intellectual level which they demonstrate, rarely, if ever, submit their hypotheses to experimental proof. The same criticism can be applied to the studies of normals already quoted.

We have retested with the Wechsler test (form I) over 100 adolescent and adult certified defectives.* The population from which they were drawn has already been described by MacMahon (1952). As a result of routine intelligence-testing we observed that some patients who had been examined a year or more before with the same test showed large I.Q. increments; and we planned a research to elucidate these I.Q. changes, and to determine the frequency of their occurrence.

The main experiment entailed the retesting of a group of 59 subjects after an average of 27 months had elapsed since the original test; 27 of these patients increased their scores by 8 points or more, 17 by 10 points or more, and 7 by 15 points or more, the maximum increment being 25 points. The remaining 32 patients showed small increases or decreases. Increments were general throughout the sub-tests of the Wechsler intelligence scale, and were not merely confined to a few of these. The test-retest correlation was 0·90.

In order to determine the maximal effect of test practice, errors of measurement, and underestimation at the time of the first test (since many certified feeble-minded patients are emotionally unstable their intelligence may occasionally be underestimated when they are tested), a control group of 29 mentally subnormal subjects, mostly new admissions to the Manor Hospital, was

* This study has already been reported to meetings of the Mental Deficiency Section of the Royal Medico-Psychological Association (Nov. 5, 1952) and of the British Psychological Society (April 13, 1953).

matched with the main group for initial I.Q. and age, and was retested after a short time-interval (average 3 months).

On retest these subjects showed an average increase of 4 points, the majority showing changes between plus and minus 4 points; only 6 had increments of 8 points or more, and only 1 of these had an increment of over 10 points (13 points). The distribution of these changes may be seen in table I. The control group data, therefore, indicate that the average increment of 4 points upon retest represents the average maximal effect of test practice, errors of measurement, and initial underestimation. In terms of test-retest correlation—0·94—the reliability of the test is quite high on this population.

Several hypotheses were advanced to account for the increase in I.Q. shown by the members of the main group. Each of these hypotheses was critically examined, but in all cases but one the evidence was such that they had to be rejected. The exception was that there was a strong relationship between very adverse early home conditions and subsequent I.Q. increases. Twelve clearly defined criteria of adverse home conditions were formulated—N.S.P.C.C. intervention, orders appointing someone as "fit person" to have charge of the child, parental attitude antagonistic towards the child, home conditions very bad, home dirty and neglected, child considerably neglected, no fixed abode, irregular school attendance due to parental neglect, gross poverty, deficiency diseases, child found begging or wandering, and parents or sibs with criminal records. These were applied to the 59 case-histories under consideration, and the presence of two or more of these somewhat overlapping criteria was taken as clearly indicating very bad home circumstances. It was found that those who had been subjected to such adverse early environments were mainly those who made large I.Q. increases. An external investigator (Dr. J. Tizard of the Medical Research Council's Unit for Research in Occupational Adaptation), who had no knowledge of either the patients or their test-scores, independently analysed the case-histories; he agreed with our assessments of home conditions in 55 of the 59 cases; in the remaining 4 cases his rating was accepted as final. Evidence of very bad home conditions was found in 25 case-histories, while in the remaining 34 there was either no evidence of really adverse conditions, or a complete lack of data regarding early home life, or (in only 6 cases) clear evidence of a good home. Tables I and II show the main results of the investigation.

The difference between the gains made by the "very bad home" group and the remainder is significant beyond the 0·1% level, which shows very clearly the strong association between early adverse environment and I.Q. increase many years later. It is consistent with this finding to suggest that the environment which is really antagonistic towards the child retards mental development for many years. Later, however, after removal from such conditions this retardation begins to fade, and I.Q. increments occur, often at ages when mental growth is commonly assumed to have ceased.

Retrospective validation, such as has been described, carries with it the possibility of error as a result of chance relationships in the records of those investigated. It was necessary, therefore, to ascertain whether the criteria of bad homes were equally effective in predicting I.Q. changes as they had been in discriminating retrospectively.

TABLE I—DISTRIBUTION OF I.Q. CHANGES

Change (I.Q. points)	Very bad homes (25 cases)		Remainder (34 cases)		Control group (29 cases)	
	No.	%	No.	%	No.	%
− 7 to 0 ..	1	4	8	24	4	14
+ 1 to + 7 ..	6	24 (100)	17	50 (100)	19	65 (100)
+ 8 or more ..	18	72	9	26	6	21
+ 10 or more ..	12	48	5	15	1	3
+ 15 or more ..	7	28	0		0	
+ 25	1	4	0		0	

TABLE II—CHANGES BETWEEN TEST AND RETEST IN FULL SCALE I.Q. POINTS

—	Very bad homes (25 cases)	Remainder (34 cases)	Total group (59 cases)
Mean change	+ 9·7	+ 4·1	+ 6·5
Standard deviation ..	6·3	4·9	6·2

t = 3·86, significant beyond 0·1% level.
I.Q. range at first test = 35–98; mean = 66·2; S.D. = 14.
I.Q. range at retest = 49–97; mean = 72·7; S.D. = 13·4.
Age range at retest = 14–50 years; mean = 23·5; S.D. = 8·1 years. (Only 9 patients were aged over 30.)
Period between test and retest: mean = 26·9 months; S.D. = 6 months.
Range of I.Q. changes: − 7 to + 25 I.Q. points.

There remained at the hospital only about 20 patients who had been tested two years before and who had not already been retested for the various experiments included in the research; from these, 6 cases were selected whose records clearly indicated adverse home conditions, and a further 5 were found who had come from homes which seemed unlikely to have been very bad. Increments were predicted in the former, but not in the latter, and it was only after definite predictions had been made that retests were undertaken. The changes in I.Q. points for those for whom increments had been predicted were: + 14, + 9, + 10, + 10, + 4, + 5, average + 8·7 points; the changes for those for whom increments were not predicted were: − 5, − 2, + 7, − 1, + 4, average + 0·6.

It will be noted that on this very small group the criteria show some predictive value; it would, of course, be desirable that this finding should be checked on a larger group, and indepedently, as was the retrospective validation.

The I.Q. changes in this investigation were largely in the upward direction, whereas in some researches already quoted the variability was equal in both directions. This, however, is probably the effect of the very adverse backgrounds of the certified feeble-minded, and it is not suggested that the factor shown to be associated with I.Q. changes in this research is necessarily the only one underlying changes in general. Other investigators have suggested both this factor and others in relation to the problem of I.Q. inconstancy. As already noted, however, these hypotheses seem never to be carried to the stage of experimental validation.

The results show clearly that intellectual retardation among such deprived people as have been studied here is not necessarily a permanent and irreversible condition. Obviously, too, the increases demonstrated over a period of two years will not represent, in most cases, the total change which the invididual has already made or will make in the future. As Honzik et al. (1948) point out, some subjects show consistent trends in I.Q. changes over a long period.

Conclusions

It is evident from the work of many different investigators that, group averages apart, considerable changes in intellectual level may take place during the course of individual development; and that the question is not so much "Is the I.Q. constant?" but rather "How constant is it?" As Honzik et al. put it:

"Whereas the results for the groups suggest mental test stability between 6 and 18 years, the observed fluctuations in the scores of individual children indicate the need for the utmost caution in the predictive use of a single test-score, or even two such scores. This finding seems to be of special importance since many plans for individual children are made by schools, juvenile courts, and mental hygiene clinics on the basis of a single mental test score."

The fact that all longitudinal studies of intellectual growth show a decline in predictive ability of the I.Q. with increase of time implies change in individuals.

The I.Q., percentile grade, or standard score must be regarded as an objective estimate of a person's present intellectual status; and it is certainly better (even for predictive purposes) than subjective judgment or unstandardised examinations. When we use the I.Q. for prediction, however, we must realise that errors are inevitable, and that these errors may have far-reaching and serious consequences for individuals selected by the tests for particular purposes.

The fact of I.Q. variability can no longer be disputed, and the evidence is rich in implications. Let us consider merely one example: it has been shown that a group of socially deprived, mentally subnormal people tend, when removed from adverse conditions, to advance towards intellectual normality. Can such relatively spontaneous changes be accelerated and improved? These and many other related problems invite the psychological and psychiatric investigator to a clear field for research.

We wish to thank Dr. J. F. MacMahon, physician-superintendent of the Manor Hospital, for his help and encouragement during this research; Mr. M. B. Shapiro, senior lecturer, in the psychology department of the Maudsley Hospital, for stimulating suggestions and criticisms; Dr. J. Tizard for help in an essential part of the experiment; Mr. A. Ehrenberg, of the statistical laboratory of the Maudsley Hospital, for useful advice; and Mr. G. J. F. Singleton for the statistical computations.

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SPECIALISATION AT SIXTEEN

SPEAKING at the inauguration of the new session at Westminster Medical School on Oct. 12, Mr. H. E. Harding, F.R.C.S., the dean, spoke strongly of the effect of the changed requirements for matriculation at London University.

"In the past," he said, "a student matriculated at about 16 years with credit passes in a minimum of five subjects and thereafter spent two years working for a Higher Certificate in subjects of his choice and aptitude, knowing that he had a place for medicine. The new requirements are six ordinary-level passes and at a subsequent examination two advanced-level passes. The results of these examinations are available in most cases only a week or two before entry to the University course and our final entries cannot be determined until this date. We have been very concerned that some of the best candidates on general grounds have failed to satisfy these requirements and a last-minute revision of acceptances has been necessary. Not a single applicant offered advanced-level subjects in English language or literature—in fact most had become scientific specialists from the age of 16. This drift from the humanities, our language and our literature, is to be deplored; for they provide the only fundamental background for a good doctor, who must have the gift of simple and lucid expression and a wide understanding of people. What may be a good background for a scientist is not enough for a good doctor and I therefore condemn these changes wholeheartedly."

Mr. Harding mentioned that in the past year Westminster students had derived great clinical advantages from a period of two weeks' resident study at St. Stephen's Hospital; he thanked the staffs of St. Stephen's and of St. Helier Hospital for the enthusiasm they showed in teaching the students. A change made during the year had been the transference of the children's department to Vincent Square: "this unit with over 100 beds should be able to provide facilities for pædiatrics teaching better than in any other undergraduate hospital." The number of students at Westminster remained steady at about 220, and applications from over 600 candidates had been considered for 65 places.

Public Health

DRIED BONES AS A SOURCE OF ANTHRAX

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MOST cases of anthrax in man in Great Britain are caused by contact with infected hides, wool, or hair, but infection has also been acquired from dried bones, bone products, or horn. Crushed raw bones are extensively used as fertilisers and in various chemical industries. Bone-meal is also used in animal feeding-stuffs. Bones for these purposes are imported from many countries, in some of which anthrax is common among animals. Large quantities of sun-dried bones from the Far East are imported, and some of these bones are infected with anthrax spores.

In Man.—From time to time cases of anthrax can be traced to bones or bone products. Legge (1905) described 2 cases in the horn industry, a 3rd in a knife hafter, and a 4th in a farm labourer who handled bone-meal fertiliser. The Chief Inspector of Factories (1939) noted 2 cases in workers in the fertiliser trade where sun-dried crushed bones from India were used. Smyth and Cheney (1935) described 1 case in a farm labourer who developed anthrax apparently from handling bone-meal fertiliser in Maine, U.S.A. Jones (1942) reported 2 fatal human cases in Kent associated with the use of bone-meal, and A. J. Wilsdon (personal communication) reported 1 case in a human contact of an animal infected from Indian bone-meal. In 1943 the Ministry of Health issued a press notice to agricultural and medical journals pointing out that care should be exercised in the handling of imported bone-meal fertiliser from India (Ministry of Health 1950).

In Animals.—Infected bone-meal has been blamed as the cause of anthrax in animals as well as in man. Jones (1942) described 2 cases, and Wilsdon (personal communication) 5 cases, in cattle, and all were believed to be attributable to the use of raw bone-meal on farms. Stockman (1911) reported that 83% of cases occurred in farms which had not previously had a case; in two-thirds of these instances the evidence pointed to infection from artificial feeding-stuffs or manures. Jackson (1930) regarded bone-meal fertiliser as one source of infection on farms in Great Britain though he believed that artificial feeding-stuffs, such as oil-cakes, were more dangerous; but he admitted the difficulty of assessing the relative importance of these two potential sources of infection. In one outbreak described by Jackson six cattle, fed in error with bone-meal fertiliser, contracted anthrax. During the 1914–18 war the decrease in anthrax in animals in Prussia and Saxony was regarded by some workers as correlated with the great reduction in imports of raw bone-meal (Hutyra and Marek 1926).

Recently, the increase in anthrax among farm animals and the possible association of this with the increase in imports of some feeding-stuffs and fertilisers, notably bone-meal, have received some attention (*Lancet* 1952, 1953). One of these reports stated that "there is no

reason to suppose at present that this has meant any increase in the incidence among humans." However, we have found in one industry 14 cases in six years from this source.

ANTHRAX IN FACTORY HANDLING SUN-DRIED BONES

Sun-dried crushed bones from India and Pakistan are the raw materials in a chemical factory engaged in the manufacture of fertilisers, glue, and gelatin. The bones, which are crushed to sizes varying from 0·5 cm. to 5 cm., are imported in canvas sacks, each holding about 1½ cwt.

Cases of anthrax occur among the workers whose duty it is to stack the bones or otherwise to handle the sacks before the chemical treatment begins. This chemical process consists in contact with mineral acids for many days, followed by treatment with lime, &c., for a long time. The resulting fluid is heated and evaporated under reduced pressure to supply phosphates, glue, and gelatin. It is not believed that anthrax bacilli or spores would remain viable throughout such a processs.

From 1947 to 1952 inclusive 13 cases of anthrax occurred in the workers handling the bones and the sacks. The 14th case was in a man who visited the factory to remove empty sacks in his lorry; a few days later he developed anthrax. No cases occurred in any other part of the factory, and anthrax was confined to those who handled the sacks and the sharp crushed dried bones. In 9 of the 14 cases the diagnosis was confirmed bacteriologically. In the other 5 treatment was begun before specimens were taken, and it was thought undesirable to disturb the lesion unduly to get a satisfactory specimen for culture.

The laboratory examined thirty samples of bone, three of dust, four of sacking, and two of dried sinews from the factory. Anthrax bacilli were isolated by animal inoculation from two samples of bone and one of sacking.

DISCUSSION

In Wales most cases of anthrax in man can be traced to contact with infected sun-dried crushed bones from the Far East. As might be expected, the anthrax presents as a malignant pustule among those workers who carry the sacks of sharp crushed bones, and no cases have appeared in other parts of the factory where the bones are chemically treated. In 13 of 14 cases the lesion was on the face or the neck.

Wolff and Heimann (1951) showed that in the United States of America most cases of malignant pustule could be traced to materials imported from the Far East. When wool was the source of the infection it was not fine wool from Australia but coarse wool from the Far East used in the manufacture of carpets. When hides were the source of the infection they were almost always kid hides from India and Pakistan. Wolff and Heimann also stated that in 1947 a million animals died of anthrax in Iran. Anthrax is also very common among animals in the Far East.

In industrial anthrax in Great Britain the origin of the material seems to be all-important. Crushed bones are imported into Britain from many countries. The patients with anthrax mentioned here handled crushed sun-dried bones from India and Pakistan in large quantities, and anthrax bacilli were demonstrated in samples of these bones. Of the 14 cases reported here 1 man was not employed in the factory but was a lorry driver who removed empty sacks from the factory. A similar incident was reported by Holgate and Holman (1949).

SUMMARY

13 cases of malignant pustule occurred in factory workers who handled sun-dried bones from the Far East.

Another case was in a lorry driver who took away from the factory empty sacks which had contained such bones.

We wish to thank Prof. J. Gough and Dr. Scott Thomson for advice and encouragement in the preparation of this paper.

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Control of Food-poisoning

Following the recent outbreak of food-poisoning in Wakefield,[1] a recommendation from the city's health committee is to be placed before the city council.[2] It asks that strong representations be made to the Ministry of Health to provide legislation that will enable a medical officer of health to close premises where persons suspected of being carriers are engaged in preparing or handling food. The shop involved in the Wakefield outbreak did in fact close voluntarily for two weeks, but under existing regulations the medical officer of health's powers are limited to the suspension of employees known to be carriers.

Poliomyelitis

Poliomyelitis notifications (uncorrected) in the week ended Oct. 10 (40th week of the year) were (previous week in parentheses): paralytic, 107 (79), non-paralytic, 69 (78); total 176 (157).

The following table compares this year, up to and including the 40th week, with the preceding six years:

Year	*Total cases up to and including 40th week*	*Cases in 40th week*
1947	7095	429
1948	1537	86
1949	4023	375
1950	6711	353
1951	2301	96
1952	3483	155
1953	4256	176

There has been an increase of 28 in paralytic cases and a reduction of 9 in the non-paralytic cases as compared with the previous week. The weekly notifications at this time of the year are often a little erratic and there is no reason to believe that the reduction in notifications will not be resumed very shortly.

Statistics for England and Wales

Provisional figures for England and Wales published [3] by the Registrar-General show that in the quarter ended June 30, 1953, the birth-rate was the highest for two years. There were 179,464 births registered during the quarter, representing a birth-rate of 16·4 per 1000 population—the highest for any quarter since the second quarter of 1951. There were 114,538 deaths registered in the quarter—a rate of 10·5 per 1000 population, which is the lowest rate for a June quarter since 1948. There were 4441 deaths of children under one year of age, giving a rate of 25·6 per 1000 related live births. The 4199 stillbirths registered represent 22·9 per 1000 of the total live and stillbirths.

Provisional figures [4] for the third quarter of this year show that the birth-rate was higher and the stillbirth and infant-mortality rates lower than the rates for the corresponding quarter of 1952. Live births registered numbered 172,976, representing a rate of 15·6 per 1000 population. Deaths registered numbered 98,588, giving a rate of 8·9 per 1000 population. Deaths of children under one year of age totalled 3832 or 22·2 per 1000 related live births. There were 3709 stillbirths registered—a rate of 21·0 per 1000 total live and still births.

1. See *Lancet*, Aug. 15, 1953, p. 339.
2. *Yorkshire Observer*, Oct. 3, 1953.
3. The Registrar-General's Quarterly Return for England and Wales: Quarter ended June 30, 1953. H.M. Stationery Office. Pp. 27. 2*s*.
4. The Registrar-General's Weekly Return for England and Wales for the week ended Oct. 10, 1953. H.M. Stationery Office. Pp. 19. 1*s*.

In England Now

A Running Commentary by Peripatetic Correspondents

AFTER a long drive through the parkland and a short approach through formal gardens of juniper and cypress, I was met at the door by Saunders, the butler, who peeled off my coat and took my hat and gloves. I was allowed to keep my stethoscope and book of forms.

I was asked to wait for a few moments, and was glad of the time to inspect the Great Hall with its carved stone fireplace, the oaken screen supporting the minstrels' gallery, the staircase with its wide and gentle tread, and the emblazoned angels peering with irreproachable piety from the hammer beams of the old timbered ceiling. The evening sun streamed in through the great mullioned windows, lancet and oriel, in a thousand fragments of tinctured light; and it was through this misty mosaic of colour that her ladyship descended with a dignity and measure which belonged to more spacious days.

She conducted me along the gallery into a bedroom which, I reflected, must be twice the area of my house and surgery put together. His lordship was enshrined in a four-poster, inhaling menthol and buttressed by a cloud of pillows. From the portraits on the panelled walls, ancestral faces regarded him, some with disfavour, some with dispassion—none with encouragement. Our consultation, including an elaborate clinical examination, took twenty minutes. The diagnosis was flu.

With customary graciousness, her ladyship accompanied me downstairs to the entrance hall. I bade her be of good cheer, for there was little cause for alarm. I felt, and hoped I looked, wise and kind and rather medieval. I was about to drive away, when Saunders hurried down the steps, bearing a silver salver and upon it a paper. "His lordship has just noticed, sir, that you have forgotten to sign his First Certificate."

* * *

What magnificent stuff the Widdicombe File is giving us these days. "ORGS." Absolutely divine. I should think the article will be wonderful too; I haven't actually read that yet. I can't stop thinking about the title. What *can* it mean?

Orgs at last, thought the traveller, gazing from the hill at the tiny town nestling in the marshes below. Orgs, the pearl of Provence as the oyster-hating King René had named it. Orgs, one of the smallest walled cities in the world and the sole to have a wall with the purpose of keeping the inhabitants in. Before these walls, Axel, brother of Charles Martel, had slain 375,000 Saracens [1] with an armoured flit gun without any noticeable benefit. A pall of blue smoke hung over one building in the centre of the town. The Grand Hôtel d'Orgs, smiled the traveller tightening his belt in anticipation of supper. The Grand Hôtel d'Orgs, the solitary hotel in the *Guide Michelin* to have four exclamation marks after it. He strolled down the hill rather nauseated.

Orgs, exclaimed the wickedest man in the world, really what will they do next? Alastair Crowley would have been aghast. It was bad enough when Aldous flippantly referred to orgy-porgies in *Brave New World*, but these people go too far. The ancients would have been shocked. "Is there an org. on at the palace tonight, Nero?" or "Splendid org. at your place last night, Messina." As for the French masters, they would simply have shuddered: "The Marquis de Sade requests the horror of your company at an org in the château tonight." Really he would go round and see the editor. He would carve it on his chest with an amethyst-tipped lancet (oh, justice), saying through clenched teeth: "this will teach you to use abbreviations."

"Orgs, sir," stuttered the keen young houseman, "I think it's Orgs, sir." "This seems to be one of the many conditions newly arisen since I was a registrar," said the surgeon. "Whatever is it?" "Why, sir, Orgs is an occupational disease of cinema organists. The mighty Wurlitzer first described it. It's a state of confusion in the motor cortex, due to the fact that they have to play arpeggios with both hands, pull out the stops, switch on the whistles, bagpipes, and drums, bounce up and down on those wooden beams with both feet, and watch for spelling mistakes in the song slides. Ultimately they do it all the time and, as you can imagine, they get terrible indigestion with meals." The surgeon threw a sponge-holder at the anæsthetist and shouted "Orgs has set in."

I'm looking forward immensely to reading the article.

* * *

John (rising four) and I have got a new calculating machine on which we do our sums. We have always owned one, but never a machine that worked by electricity nor one with so many buttons. It has rows of 1's, 2's, 3's, &c., for adding or taking away, and another row of buttons that show an impetuous eagerness to start multiplication. It will give us an answer to 20 figures though we don't usually want all that. We rate it almost as high as a cash register. ("What will you have today, Sir? Rice is nice and cheaper.") Concealed in it are unsuspected depths of comic invention. Clear the registers and take away 1 from nothing. What's the answer? At school it may be minus 1, but on our machine it is quite plainly 9999999999999999999. This result reduces John to helpless laughter and he cannot press another button for at least ten seconds. It is not, however, his favourite sum, which always centres round the number 6, admittedly a good all-round number, usually honest and dependable. He likes to multiply 6666666666 by 6666666666. Curiously enough the result is 44444444435555555556 which has a certain attractive symmetry. My own favourite is to divide 355 by 113. The machine works the answer, clears itself, and returns to the starting-point in breathless haste. There is just time to gulp a cup of coffee if it is not too hot. The result is 3·141592920, π correct to 6 places of decimals; we have tried a lot of other fractions but they are all quite hopeless. They tell us that π is not only irrational but transcendental; we haven't got as far as that yet. Altogether it's a wonderful machine and it lacks only one gadget—a bell that rings when we do the sum right.

* * *

I approbate that mother who wrote to the schoolmistress protesting against Maggie being taught physiology. "It don't do her no good, and only makes her rude." I hold that to attempt to educate the public by health talks is to do them disservice. Hygiene is all very well. Teach people to be clean, to look after their teeth, to eat, drink, and smoke in moderation, and to take regular open-air exercise. But to tell them to look for the early signs and symptoms of serious disease? I think not.

We ourselves are bad enough in our estimation of subjective occurrences. Which of us has failed to recognise in himself heart-disease or malignant growths? I have always supposed myself to be relatively free from this foible. But last week revealed that I am no better than my betters.

Weakness of my right hand and various indefinite sensations in the upper limb set me on the path of differential diagnosis. Was I conscious of some circulatory difference; could I detect dissociated anæsthesia, or wasting of the thenar muscles? Attempts at personal investigation are conspicuously clumsy and mine soon attracted attention. "What on earth are you doing?" asked she who insists on knowing everything. Shamefacedly I described my symptoms and the fears that they had occasioned. "Don't you think that taking up bed-making for the first time at your age might have something to do with it?" said she, who if she has any respect for such academic distinctions as M.D., F.R.C.P. successfully conceals it.

* * *

Overheard at an interview for a post of county medical officer of health in Ireland.

Member of Selection Board: "The League of Nations used to collect international epidemiological information, but WHO looks after it now."

Candidate: "I don't know."

M.S.B.: "But I've just told you.'

Candidate: "Who?"

M.S.B.: "That's right."

1. Ancient Provençal word for mosquito.

Letters to the Editor

GASTRIC RESECTION FOR HÆMORRHAGE

SIR,—In the search at operation for the cause of hæmatemesis and melæna, Mr. Ferguson (Oct. 10) would like the limit drawn at laparotomy, followed by the use of eye and hand on the outside of the viscera. If no abnormality is found, he advises a burst of activity in the form of passing through the motions of one's favourite brand of partial gastrectomy, in the hope, I presume, that this shot-in-the-dark technique will put the lesion in the bag. I agree he will probably be right for 8 or 9 patients out of 10. But what of the other 1 or 2? They may well bleed on, and one has seen it happen, that a pretty partial gastrectomy was performed but the bleeding ulcer was left behind.

It is by no means rare to find no external sign of an ulcer at laparotomy for gastroduodenal hæmorrhage, and yet at gastrotomy one or more acute ulcers, from one-eighth of an inch to one inch or larger in diameter, may be found. These ulcers, in my experience, are increasingly common in elderly women, and are usually on the posterior wall in the middle third, but sometimes they may be found high on the lesser curve or may even be in the fundus on the posterior wall. Worse still, the bleeding points may be deeply down the duodenum, more than two inches from the pylorus. I have seen two such ulcers, one being partnered by an acute gastric ulcer which at first was thought to be the source of hæmorrhage, the bleeding duodenal ulcer being nearly overlooked and left in situ.

Gastrotomy, even duodenotomy if necessary, are the only ways of finding the exact site of trouble, and so ensuring that the operation is not followed by continued bleeding. Mr. Ferguson does not care for gastrotomy, saying it is not justified by the soiling and loss of blood it entails, and that the view inside is a poor one owing to the adherent blood-clot. Perhaps we do gastrotomy in different ways, for I find it helpful in locating the cause.

The stomach is lifted into the wound and towels placed about it to prevent soiling. An incision about four to six inches long is made along the middle of the anterior surface of the stomach starting at the antrum and usually stopping short before the point is reached where the customary transverse section is made. The cut edges are grasped by Duval forceps which reduce bleeding to a trifling trickle. Large blood-clots are cleared out by hand and large retractors of the Pozzi or Deavers variety (not the sharp-edged Morris retractor, which cuts the mucosa), suction, and wet or dry swabs are used; a good light is focused into the lumen, and the whole interior of the stomach can be seen as clearly as if looking straight into the inside of a barrel. A finger is passed into the duodenum, and if necessary, both the remnant of the antrum and the pylorus may be cut through, and even the anterior wall of the duodenum may be incised for about one inch. The view is magnificent, and is unobscured by blood-clot. If no source of bleeding is found, the edges may be readily and safely sutured with no serious reduction of lumen.

Whilst the stomach and duodenum are open and no satisfactory cause has been found, it is still possible to make a further search of the lumen, using a sigmoidoscope to get a view down the duodenum. Also jejunotomy can be done for introducing the sigmoidoscope. The jejunum is folded on to the sigmoidoscope in concertina fashion, an excellent view of the musoca being obtained. A long bronchial sucker is a great help in clearing the way.

If no ulcer is found after such methods, and an œsophageal source of bleeding has been excluded, it is then fair to do partial gastrectomy on an empirical basis. I have a personal preference in these patients for adding a vagotomy to partial gastrectomy, perhaps even more empirically.

I agree with Mr. Ferguson that it is not safe to close the abdomen without making an attempt to stop the bleeding, but I prefer to avoid "blind" partial gastrectomy, and to stick to the fundamental principle of surgery—adequate exposure of the lesion.

Radcliffe Infirmary, Oxford. G. E. MOLONEY.

SIR,—Mr. Ferguson draws attention to a very real problem of surgical management. I agree that, with the exclusion of external evidence of a gastric or intestinal lesion, it is right to proceed with partial gastrectomy for bleeding, without wasting time doing a gastrotomy. I would like to add two points. Firstly, the surgeon should split open the stomach, immediately it is removed, and inspect it within. Secondly, if he finds no obvious erosive gastritis, ulcer, or other cause of hæmorrhage he must inspect the inside of the remaining gastric fundus.

I have seen two patients in whom a very high peptic ulcer was missed by external palpation; and in both instances hæmorrhage persisted after partial gastrectomy, and proved fatal. In one case I was the assistant and was astonished to see at autopsy quite a large chronic ulcer high up on the splenic aspect. In the second case I operated myself and the same thing happened. At autopsy a shallow ulcer about 1 in. in diameter was found close to the œsophageal junction on the posterior wall of the stomach. The crater was traversed by a large artery which had bled from a longitudinal clean-cut slit. Even at autopsy, when the gastric remnant was removed, this ulcer could not be felt externally. I believe that, in each case, the patient's life could have been saved if the gastric fundus had been inspected directly and the offending vessel dealt with from inside.

From my own experience of the type of case discussed by Mr. Ferguson, where a laparotomy has been considered necessary for severe bleeding, I would strongly advocate partial gastrectomy at any age.

Liverpool. JOHN A. SHEPHERD.

PAIN IN CHRONIC GASTIC ULCER

SIR,—Discussions on the relation of gastric ulcer to pain are hampered by the lack of a common viewpoint in psychology and medicine. Pain is always associated with pattern-changes in the vascular flow in the tissues; and the cardiovascular system is as much an organ of pain as the brain is the organ of the mind. Psychiatrical conditions can be discussed in terms of vascular flow[1]; and incomprehensible titles, such as The Internalized Mother as Harmful Food in Peptic Ulcer Patients,[2] would invite study if the meanings the authors intended to convey were related to particular tissue ischæmias and hyperæmias, and associated with frustrations and compulsions respectively.

Acid kills cells, and, amongst other changes, damaged cells become acid and acidify neighbouring cells—the primary origin of pain. The central nervous system ensures instant sharing of the acidity by distant cells of the body (nerve impulses being equivalent to a transfer of hydrogen ions, or acidity), thus saving the damaged cells from destruction where possible. The part played by the vascular system is mainly a removal of acid metabolic products, ischæmia increasing the acidity in any functioning tissue.

Specific reflex pathways are mechanised by modifications of the cerebral synaptic resistances, which can be expressed in terms of local blood-flow in the neurophil.[1] The sensitisation of nerve-endings by tissue degeneration products may be considered as a decrease of tissue (synaptic) resistance with hyperæmia and congestion. The protection of nerve-endings by mucus is an ischæmic insulation of the nerve-endings. Tissue tension distorts the vascular network, giving patchy ischæmia and hyper-

1. Pickworth, F. A. New Outlook on Mental Diseases. Bristol, 1952.
2. Garma, A. *Int. J. Psycho-anal.* 1953, **34**, 102.

æmia (cancrum oris without œdema is painless). Tissue acidity is a cause of dilation of blood-vessels. The cerebral patchy anæmia in melancholia is relieved in some cases by the vasodilating effects of electroconvulsive therapy, and the congestion of the motor cortex in general paralysis makes the patient happy—the two clinical conditions representing chronic pain and its opposite, respectively.

There is therefore no need to choose between the "acid"[3] and the "inflammatory" hypotheses, since both are ultimately true, but expressed in different terms. As Mr. Kinsella shows in his reply[3] to Professor Pickering (Sept. 19), to state the problem in terms of vascular flow does clarify in a general way the meaning of his article.[4]

Birmingham. F. A. PICKWORTH.

"CHEMOTHERAPEUTIC AGENT" AND "ANTIBIOTIC"

SIR,—I read with interest Dr. Glass's letter last week. I found it desirable to suggest (Aug. 29) a more exact literal definition of "chemotherapeutic agent" than that offered by Professor Waksman, but had not intended to imply that the literal interpretation is in use or should be used. "Antibiotic" in its etymological sense refers to something "against life," and, as someone else has already asked, "Whose βιοσ is it?" To follow this line of thought, aspirin could be described as an antibiotic; for, if ingested in sufficient quantity, it destroys the life of man, but none would insist on such literal accuracy.

Although the terms "antibiotic" and "chemotherapeutic agent" both have much more limited meaning than their etymology would suggest, it does appear from the correspondence that agreement has not yet been reached as to what exactly they should mean. After all, this is what one should expect of terms recently coined, and, therefore, still evolving.

Frodsham, Cheshire. G. S. ERWIN.

RESETTLEMENT OF DISABLED PERSONS

SIR,—Your annotation (Oct. 10) is not only unfair but it demonstrates clearly the self-sufficiency of some doctors which has in fact been one of the greatest difficulties in resettling the disabled. The purpose of your annotation seems to have been a denial of any good that the Ministry of Labour and National Service might have done in recent years, and a belated recognition of the achievements of a few medical pioneers in the past. You remind us of the report of the British Medical Association Committee on Fractures in 1935, the Government interdepartmental committee in 1939, the rehabilitation of miners in 1940, and a few other such activities. In so far as I myself was partly or largely responsible for many of them I can the more readily ask what this has got to do with the endeavours of today. Let us be rid of this complacency.

The Ministry of Labour has tried hard to implement the proposals of these pioneers, and in so doing has never lost an opportunity of collaborating with the medical profession. Of course there have been failures—who would have expected otherwise in a scheme of such magnitude? It is because this great social service (and whatever you may say it is still ahead of any similar service in any other country in the world) has shown defects in its first few years of trial that the medical committee and the National Advisory Council have persuaded the three Ministers concerned to re-examine the position.

But for you to write that "perhaps the findings of the present committee of inquiry may point the need for fuller recognition of the medical implications of disability" is little less than arrogance. This has been the endeavour from the beginning, and if in this respect there has been failure it lies more with the medical profession than it does with the administrators.

As a simple illustration of this, let me quote from your annotation, which refers to doctors who are lukewarm because "they have been discouraged by its failure to give effective help to those patients whom they have referred to it." Did these doctors really think that their duty was done when they had signed a form of reference? Did they believe that nothing more was expected of them than to sign a name? In the interests of their patient, in the aid of the disablement rehabilitation officer, and in the improvement of the service, why did they not do more about it?

I will not bother your readers with the record of success that has been achieved in nearly one million disabled persons in Great Britain. Neither will I labour the mistakes of which we are all aware. But I would urge that every physician, surgeon, and general practitioner should find out for himself how great a service is already being offered for disabled patients and ask only that every doctor should use the service intelligently, and try to improve it by thoughtful collaboration rather than by thoughtless criticism.

REGINALD WATSON-JONES
Chairman, Medical Advisory Committee,
National Advisory Council on
London, W.1. Resettlement of the Disabled.

BARBITURATES AND ALCOHOL

SIR,—Apropos the recent discussion on this subject in the lay press and in your columns,[1] here is the story of Boris.

Boris is a colossus of a Slav. He carries his fifty years as becomes a professional soldier, though he is now a skilled worker in mosaic. But, like Achilles, he has one weakness—his stomach. Ever since he "did duty" in the Siberian salt mines he has been a martyr to indigestion.

When I first met him on admission he was deeply comatosed. His normal ruddy complexion had become that of an over-ripe Victoria plum. His breathing was stertorous, and his chest showed signs of early aspiration pneumonia. His temperature was 101°F. He was thought to have attempted suicide with 'Nembutal.'

Following gastric lavage, twelve hours in an oxygen tent, and suitable doses of penicillin, he regained consciousness, and proved to be more sinned against than sinning.

Apparently on the evening before admission he had had a severe bout of indigestion. Friends had persuaded him that the panacea for all ills, including indigestion, was large doses of strong beer. Accordingly he drank ten bottles of 'Special Ale.'

On arriving home he still felt uncomfortable, so he took three capsules of nembutal which had been prescribed by his doctor for sleeplessness. He went to bed, and sank into an oblivion that lasted twenty-four hours. A derivative of barbituric acid was detected in both blood and urine.

The General Hospital,
Birmingham. J. D. CUMMING.

HYPERPOTASSÆMIC PARALYSIS

SIR,—I am very much indebted to the article by Professor Bull and his associates in your issue of July 11. They have, I think, given me the answer to the cause of death in two very interesting cases which I saw in 1950, and which I have reported elsewhere[2]; for until I read their article I was in ignorance of the earlier work which they cite.

Briefly, the history in each case was similar. Both patients had renal suppression of relatively slow onset; and before the suppression had continued long enough to give cause for immediate alarm, they developed a rapidly ascending flaccid paralysis involving finally the muscles of respiration and resulting in death within an hour of its onset. The mental condition of both was perfectly clear to the end.

At the time I was very puzzled about these cases. I had no facilities for estimating the serum electrolytes, and knowing that because of the renal failure the serum-

3. Kinsella, V. J. *Lancet*, Oct. 10, 1953, p. 780.
4. Kinsella, V. J. *Ibid*, Aug. 22, 1953, p. 353.

1. See annotations, *Lancet*, 1953, i, 1140; *Ibid*, Sept. 12, 1953, p. 554.
2. *Med. J. Aust.* 1951, ii, 9.

potassium level was very probably high, I did not consider this level to be a likely cause of the condition.

After careful investigation of post-mortem material, I decided that thrombotic thrombocytopenia was the cause of this rather unusual form of decease. I am now, however, much more certain that these two deaths were also due to hyperpotassæmia.

Geelong, Victoria, Australia. DAVID C. WALLACE.

PERIODIC MEDICAL OVERHAUL

SIR,—Dr. Capel (Oct. 10) ascribes to me surprise that a comprehensive clinical examination failed to reveal malignant disease; and then, somewhat gratuitously, proceeds to remind me that there is a stage in every disease before which diagnosis is impossible and that there still are many diseases which, however early they are detected, are incurable.

Evidently he has failed to appreciate that I described three experiences as the text of my thesis in disparagement of the claim advanced in favour of periodic overhauls that early evidence of trouble may be discovered and arrested. To illustrate the value of the periodic overhaul, he advances the investigation of such symptoms as fatigue, indigestion, piles, bronchitis, menorrhagia, flat feet, and varicose veins—symptoms for which any sensible person would seek advice. I must again point out that the proponents advise the overhaul *when well* (I repeat the italics employed in my original contribution).

Dr. Capel concludes by advocating a course of instruction to help the individual to adjust himself to his environment; to avoid over-eating, over-drinking, and other unhygienic habits, and a bad mental approach including domestic discord; to learn about suitable clothing and the evils resulting from lack of hobbies and presumably an indefinite number of similar matters. That is a very different thing from a medical overhaul; it is common-sense health education which should receive wholehearted approbation, although I am by no means persuaded that a doctor is the best choice for such instruction.

London, W.1. ADOLPHE ABRAHAMS.

HYALINE MEMBRANE IN THE NEONATAL LUNG

SIR,—We are grateful to Dr. Claireaux (Oct. 10) for demonstrating the importance of "hyaline membrane" as a cause of death in infants in this country, but his support of the theory that the membrane is produced by hyalinised epithelial squames is, I think, unfortunate.

In infants dying a few weeks after birth keratinised and unkeratinised squames are frequently found and are unaccompanied by any reaction or hyaline membrane. Similar squames can also be seen embedded in, but distinct from, the hyaline deposits in "hyaline membrane disease" in the newborn.

The results of Dr. Claireaux's experiment with autolysed amniotic debris are not necessarily related to the human disease; indeed, it would be surprising if any amorphous hyaline material injected into the lung of rats did not show a deposit or "membrane" production in one of six animals thus injected.

Hyaline "membrane" is found in the lungs in children outside the newborn period dying from nephritis, rheumatic heart-disease, and some deformities of the heart. These "membranes" are virtually indistinguishable from those seen in the newborn, and any theory of the production of hyaline membrane in the newborn should, I think, take these other similar "membranes" into consideration. In the older group it is unlikely that the deposits are in any way related to inhaled material, and the most obvious common basis is some disorganisation of vascular circulation within the lung. The newborn child sustains great physiological changes in pulmonary circulation during the transference from placental to alveolar oxygenation, and it would seem likely that it is in these intrapulmonary vascular changes associated with birth that the prime factors leading to hyaline-membrane production arise.

Department of Pathology, The Children's Hospital, Sheffield. JOHN L. EMERY.

THE WRONG BLOOD

SIR,—You may delegate administrative responsibility, but if you divide it you invite chaos. The pathologist must administer the blood bank, hence he should supervise the chain of demand and supply between patient and blood bank, even though the clinician may order and inject the blood. The argument is reinforced when the clinicians are mostly part-time and the pathologist full-time.

"Study your problems with diligence," "look not for refuge to anyone beside yourself," are maxims for a consultant; and if the pathologist follows them, his advice and help will be valued. Let him wriggle out of responsibility which is naturally his, and he will forfeit the respect of his colleagues. In this country it has always been assumed—in contrast to the suggestion made in Dr. Walther's letter last week—that clinical pathologists are concerned with clinical matters, not with techniques alone.

Central Middlesex Hospital, London, N.W.10. GEORGE DISCOMBE.

ACUTE ANURIA

SIR,—In discussing the treatment of anuria your leading article of Aug. 22 lays emphasis on the need to correct the water and electrolyte disturbance. Thus your approach is essentially symptomatic, for these changes are *secondary* to the renal dysfunction. It is to be regretted that the primary change in the kidney is so lightly touched upon.

The reader is left with an impression that a depleted blood *volume* leads to anæmia of the kidney—though "ischæmia" has been its designation—and that this is responsible for the anuric state. This interpretation ascribes to the kidney a *passive* rôle which is readily denied by its failure to recover when the blood volume has been restored, and still more emphatically by an assessment of the various factors that precipitate anuria. Among these Darmady [1] includes acute pancreatitis, emotional states, head injury, myelomatosis, typhus fever, Weil's disease, pneumonia, favism, mushroom poisoning, streptomycin, burns, crush injury, septic abortion, and many other conditions not associated with a depleted volume of circulating blood. In acute glomerulonephritis, which you cite as an occasional antecedent, not only is there no reduction in blood volume, but renal ischæmia is also not evident. For Bradley [2] has shown in this disease, that if the extraction rate of *p*-aminohippuric acid (P.A.H.) is concurrently determined, the renal blood-flow is found to be increased. Yet the increase in renal blood-flow is associated with reduced glomerular filtration. Such an alteration in renal hæmodynamics cannot be explained by a passive change in the kidney; for it proclaims an unequal distribution of vasomotor tone within the organ, determining the blood-flow through its components.

It may be that you are inclined to attach lessened significance to biochemical interpretations in this connection, because the popular concept of urine production, with which such data are correlated, has been weakened by the researches of Platt,[3] Borst,[4] Wirz,[5] Brodsky and Rapoport,[6] and many others. Or because confidence in it has been shaken still further by the experiments of Harvey L. White,[7] who, on explanting the bladder base

1. Darmady, E. M. *Proc. R. Soc. Med.* 1952, **45**, 844.
2. Bradley, S. E., et al. *Amer. J. Med.* 1950, **9**, 766.
3. Platt, R. *Brit. med. J.* 1952, i, 1313, 1372.
4. Borst, J. Personal communication, 1952.
5. Wirz, H., Hargitay, B., Kuhn, W. *Helv. physiol. acta*, 1951, **9**, 196.
6. Brodsky, W. A., Rapoport, S. *J. clin. Invest.* 1951, **30**, 282.
7. White, H. L. *In* Bradley, S. E., Renal Function. New York, 1950; p. 128.

and sampling the ureteric outflow, found that partial compression of the renal artery of one side reduced the water and sodium output by 50% on that side without any detectable change in glomerular filtration-rate or in tubular extraction. Nevertheless you say that "cogent evidence has been brought against the idea that blood is diverted from cortex to medulla and juxta-medullary glomeruli"—which means that you are prepared to attach greater importance to inferential biochemical data than to actual visual proof.[8–13]

Lövgren's [14] experiments on the frightened cat have shown that adrenaline stimulation does provoke the Oxford mechanism, and they offered an explanation of the "afferent" and "efferent" glomerular spasm which has been held responsible for the alteration in renal hæmodynamics which adrenaline produces. From this it would be reasonable to assume that diversion of renal blood-flow comprises a series of stages dependent on progressive alteration of intravascular tone (Sophian [15 16]) and based on the underlying principle of critical closing and critical opening pressures (Burton [17]). The experiments of Van Slyke et al.[18] do not deny its occurrence, but rather suggest that the Trueta reflex mechanism may not be provoked if the stimulation is too gradual, even though it continues and destroys the subject. On the other hand, the evidence derived from the experiments of Insull et al.[19] cited by you are hardly acceptable, made as they were on well-nigh moribund animals in which all trace of the vascular tone responsible for the reflex had long since disappeared. The theory of maximal tubular clearances on which much of the "cogent" evidence has been founded, although brilliantly conceived, can hardly be considered final. We are left to conclude that the visual evidence supporting the Trueta mechanism must far outweigh the inferred evidence, and that cortical ischæmia is accompanied by diversion of blood to the medulla.

The catadromous fish (e.g., salmon and eel) also offer evidence of renal shut-down on change of environment (Homer Smith [20 21]), this effect being seen when they move from fresh water to the sea. Further, it has been shown experimentally that renal ischæmia of the Oxford pattern precedes acute cortical necrosis. Franklin and Sophian,[22] demonstrated this by stimulating the renal nerve. Also Hoff [12] has shown that long-continued electrical excitation of the cat's brain produces cortical ischæmia and medullary congestion in the kidney, leading to acute tubular necrosis.

In citing Oliver [23] you have perhaps lost sight of the fact that many of his nephron dissections were performed on Shaw Dunn's original specimens. Shaw Dunn and Montgomery [24] established that these anuric kidneys with cortical destruction displayed subcapsular, juxta-medullary, and medullary survival; but you say nothing of this evidence which supports the then unheard-of Oxford mechanism, although you admit that ischæmia is responsible for the cortical damage. Further histological evidence has been provided in particular by Solymoss,[25] De and Sengupta,[26] Borst,[27] and finally and extensively by Sheehan [28] in a review of his vast post-mortem material. Sheehan has shown that in complete cortical necrosis the spasm affects the proximal end of the arterial tree at a distance of 0·5–1·0 mm. from the origin of the intralobular artery, which explains the survival of the juxtamedullary nephrons. This indicates a vasomotor alteration and therefore an active rôle for the kidney.

Biopsy of the anuric organ, by punch or by exploration, supports the view that cortical ischæmia and medullary congestion are concomitant.

The experiments (of Franklin and Sophian [22]) have demonstrated the mediation of the nervous pathway in changes of intrarenal vascular tone (Hoff [12]) and the ability of the kidney to recover if the changes are not very advanced. Evidence is also forthcoming, from the rapid establishment of diuresis by certain therapeutic methods, that the tubular state is reversible even very late on. This has been demonstrated by Dérot [29] with peritoneal dialysis, by Vallery-Radot [30] with exchange transfusions, by Hingson [31] with conduction anæsthesia reaching the lesser splanchnic level, by Chatterjee [32] with vitamin C and anti-histamines, and by O'Sullivan and Spitzer [33] with paravertebral block. In interpreting the effects of intraperitoneal dialysis and of exchange transfusion, a rapid correction of the *milieu intérieur* is implied which is comparable to the physiological change-over of the catadromous fish in re-establishing renal function when resuming a fresh-water habitat.

The association of blocked tubules with fatal anuria merits consideration. The obstructing material is held to be a myohæmoglobin derivative. But myohæmoglobin itself has been shown by Franklin [34] to provoke diuresis. In a normally functioning kidney this substance cannot be held responsible for the renal failure. In fact, Yuile et al.[35] found that a short period of renal ischæmia was necessary for hæmoglobin casts to be produced in the rabbit; whilst Badenoch and Darmady [36] have shown that, in rabbits, mechanical reduction of the renal circulation for 90 minutes, together with injection of stroma-free hæmoglobin, causes a higher fatality than either procedure alone. It therefore seems that tubal blockage of this type implies a preceding renal ischæmia. (In cases of incompatible transfusion the early accompanying anoxæmia could have provoked the renal shut-down, whilst in crush injury the Oxford experiments have underlined the ætiological stimulus.) Accepting that a gradual failure of glomerular filtration accompanies the diversions of renal blood-flow we see that the filtered substances (innocuous in themselves) will tend to accumulate in the tubules and form a mounting and insuperable barrier to urine secretion after the cortical ischæmia has been overcome. In the early stages of the failure denervating the kidney by conduction anæsthesia could prevent this, and the accumulating material would then be continuously voided. Meanwhile, if an underlying and associated anoxæmia had been responsible—as in cases of incompatible transfusion—measures directed towards reducing this anoxæmia reduce mortality.

We should recognise, I believe, that the "suicidal ischæmia" persists in anuria but can be overcome except

8. Trueta, J., Barclay, A. E., Franklin, K. J., Daniel, P. M., Prichard, M. M. L. Studies of the Renal Circulation. Oxford, 1947.
9. Franklin, K. J. *Proc. R. Soc. Med.* 1950, **43**, 467.
10. Franklin, K. J. *Ibid*, 1949, **42**, 721.
11. Daniel, P. M., Peabody, C. N., Prichard, M. M. L. *Quart. J. exp. physiol.* 1952, **36**, 199; *Ibid*, **37**, 11.
12. Hoff, E. C., et al. *J. Neurophysiol.* 1951, **14**, 317.
13. Kramer, K., et al. *Int. physiol. Congr.* 1950, p. 314.
14. Cited by Franklin, K. J., Ciba Symposium on Circulation, 1951.
15. Sophian, G. J. Ciba Symposium on Circulation, 1951.
16. Sophian, G. J. Toxæmias of Pregnancy (in the press).
17. Burton, A. C. *Int. physiol. Congr.* 1950, p. 139.
18. Van Slyke, D., et al. *Amer. J. Physiol.* 1946, **145**, 314.
19. Insull, W. jun., Tillotson, I. G., Hayman, J. M. jun. *Ibid*, 1950, **163**, 676.
20. Smith, H. W. *Ibid*, 1931, **98**, 279.
21. Smith, H. W. *Ibid*, p. 296.
22. Franklin, K. J., Sophian, G. J. *Proc. R. Soc. Med.* 1951, **44**, 399, 401.
23. Oliver, J., MacDowell, M., Tracy, A. *J. clin. Invest.* 1951, **30**, 1307.
24. Dunn, J. S., Montgomery, G. L. *J. Path. Bact.* 1941, **52**, 1.
25. Solymoss, A. *Lancet*, 1949, i, 957.
26. De, S. N., Sengupta, K. P. *Ibid*, 1951, ii, 1100.
27. Borst, J. J. G. Personal communication, 1952.
28. Sheehan, H. L., Moore, H. C. Renal Cortical Necrosis. Oxford, 1953.
29. Dérot, M. *Journées méd. toulousanes.* 1951.
30. Vallery-Radot, P. Cited by Dérot, 1951.
31. Hingson, R. A. Lecture at the Royal College of Obstetricians and Gynæcologists, 1948.
32. Chatterjee, H. N. *Lancet*, 1952, ii, 90.
33. O'Sullivan, J. V., Spitzer, W. *J. Obstet. Gynæc., Brit. Emp.* 1946, **53**, 158.
34. Franklin, K. J. Cinefilm demonstration at the Royal Society of Medicine, 1950.
35. Yuile, C. L., Gold, M. A., Hinds, E. G. *J. exp. Med.* 1945, **82**, 361.
36. Badenoch, A. W., Darmady, E. M. *Brit. J. exp. Path.* 1948, **29**, 215.

in the very latest stages. Instead of dealing with its effects and allowing it to continue, we should deal with it directly.

Unfortunately for the acceptance of the Trueta diversion of renal blood-flow, the renal syndromes it precipitates can be countered with some degree of success by attacks on its flanks. But the frontal assault would give us both better results in practice and a better understanding of renal problems.

JOHN SOPHIAN.

REMUNERATION OF SENIOR PRACTITIONERS

SIR,—Some six months ago you kindly published a letter [1] in which I pointed out that I, and others in a similar position, were likely to lose £100 a year owing to the Danckwerts award. I was somewhat severely blamed for this letter; but it has, alas, turned out to be fully justified. The £100 has now vanished into the pockets of others.

Sevenoaks. GORDON WARD.

THE DRUG BILL

SIR,—It is often possible to add some suggestive to specific therapy by prescribing an elegant and useful proprietary preparation as a change from the sometimes unimaginative *National Formulary* equivalent. The fascinating name or interesting method of presentation may add confidence to the manner in which it is prescribed or taken.

This may be an abuse of the placebo, but it is very useful in practice.

GENERAL PLACEBITIONER.

JUDET ARTHROPLASTY OF HIP

SIR,—The formation of a bursa around the stem of a Judet prosthesis which protrudes through the lateral femoral cortex does not appear to be generally recognised as a cause of pain following arthroplasty. This complication occurred in the two following cases:

CASE 1.—A woman, aged 56, nine months after operation complained of pain in the region of the greater trochanter on walking. Examination showed a swelling beneath which the tip of the acrylic stem could be felt. At operation the bursa, which was found to lie beneath the iliotibial tract, was excised and the protruding stem resected.

CASE 2.—A man, aged 58, twenty-two months after bilateral arthroplasty noticed aching on the lateral aspect of the left hip. Examination revealed a small tense bursa in which the tip of the stem could easily be palpated. The position of the steel core of the prosthesis, in serial radiographs, showed that as a result of absorption of the femoral neck beneath the head of the prosthesis the stem had shifted laterally about $^3/_4$ in. The bursa and the protruding stem were resected.

In both patients the pain was relieved.

Two patients since have had resection of the tip of the protruding stem for pain in the region of the greater trochanter, but in neither case was bursa formation evident on clinical examination.

Department of Orthopædics, Guy's Hospital, London, S.E.1. N. T. HOLDEN.

LEGAL RESPONSIBILITY IN BLOOD-TRANSFUSION

SIR,—Dr. James (Oct. 3) must surely have misunderstood the whole object of my letter (Sept. 26), and he now raises considerations which cannot be discussed adequately in correspondence columns.

All the same I feel it is essential to point out that many of us would disagree categorically with his statement that the allergic manifestations of migraine are quite unlike those of other allergic conditions—asthma, hay-fever, and nettlerash—in that migraine cannot be treated on allergic grounds and that skin tests are never positive. The histamine skin test is positive in a large percentage of cases of migraine, and a number of us consider that it is treatable by desensitisation with neostigmine [1 2] as well as by other methods.

This goes to support my contention that if asthma, hay-fever, and nettlerash are contra-indications to being a blood-donor then migraine should also be included. Whether the three former really are capable of being transmitted in the weak dilution which is probable in the pooled fluid is a matter about which Dr. James knows far more than I do.

London, W.1. NEVIL LEYTON.

GRADING OF S.H.M.O.s

SIR,—The statement concerning the review of senior hospital medical officers which you published last week (p. 829) calls for one or two comments.

(1) "The Ministry replied that the status of all the practitioners originally graded as S.H.M.O. had been thoroughly reviewed on more than one occasion. . . ."

This is categorically untrue. I cannot say how many are in my position, but probably I am not unique in that my case has been reviewed once only. Such cases must be well known to the Ministry's officials. Of course a "review" may have taken place without the victim having been appraised of it. Perhaps this is what the Ministry means.

(2) The original grading of S.H.M.O. was made as a provisional status to cover those practitioners who were more than registrars but did not quite measure up to full consultant status. In 1949 it was clearly held out that good work would lead to promotion, and the grading of S.H.M.O. would gradually cease. If, subsequently, it has been found "convenient" not only to retain the grading S.H.M.O. but to increase the numbers of practitioners so graded in such a way that soon S.H.M.O.s will outnumber consultants in some specialties, then such a "convenience" should not be adopted at the expense of practitioners graded before the change in policy. Surely these are entitled to a "no-detriment" clause. As matters stand at present the Ministry can be fairly charged with a breach of faith.

(3) What is probably more important than this injustice to individuals by the Ministry is the effect of the Ministry's statement on the development of the health service. This statement will have the effect of fixing a "caste" system—where the Ministry has been pleased to call you, there you stay for life. No allowance is made for original and useful work. It is no argument to say that the individual can change his job; the Ministry's officials know, probably better than most, that such advice is merely adding insult to injury, for they themselves take care that, in some specialties at any rate, an insufficient number of consultant posts is advertised. If it is now difficult to fill house posts because of the past and present policy regarding registrar status, I submit that further freezing into a caste system will choke off most newcomers to the profession whose "mistaken" idea it is that they might contribute usefully to medicine by actually working. A caste system which refuses to admit for consideration original work must inevitably mean that the most important thing in medicine is to get to know the right people on the right committees. As this can only be done in "centres," the least the Ministry's officials should do is to stop saying that the health service is improving conditions and standards at the periphery. The reverse is now in process and what little good the health service has done to improve "peripheral" medicine will now be undone. Is this the intention?

There is no real difficulty in the situation, if the Ministry does in fact not wish to destroy an important part of the health service fabric. All that is required is that, without changing the "establishment" of a given post, an individual may, on proving his worth, be upgraded himself, the post to revert should he leave it. If this minor modification is unacceptable to the Ministry as a principle of simple justice, then the charge of bad faith, not only with S.H.M.O.s but with the whole profession of medicine, will be substantiated.

S.H.M.O.

1. *Lancet*, 1953, i, 444.

1. Pelner, L., Aibel, M. E. *J. Lab. clin. Med.* 1942, **27**, 1546.
2. Leyton, N. Migraine and Periodic Headache: A Modern Approach to Successful Treatment. London, 1952.

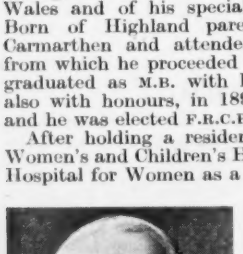
Obituary

EWEN JOHN MACLEAN

Kt., T.D., M.D., LL.D. Edin., D.Sc. Manc., LL.D. Wales, F.R.C.P., F.R.C.O.G., F.A.C.S., F.R.S.E., D.L.

Sir Ewen Maclean, who died in Cardiff on Oct. 13 at the age of 88, was the doyen of the profession in South Wales and of his specialty in the country generally. Born of Highland parents, he was brought up in Carmarthen and attended the local grammar school, from which he proceeded to Edinburgh University. He graduated as M.B. with honours in 1889 and as M.D., also with honours, in 1891. He later became M.R.C.P. and he was elected F.R.C.P. in 1922.

After holding a resident appointment in the Bristol Women's and Children's Hospital, he went to the Chelsea Hospital for Women as a registrar and there started his life's work in obstetrics and gynæcology. In 1901 he was appointed the first honorary gynæcologist to Cardiff Infirmary (later Cardiff Royal Infirmary) and he served with distinction in that office until he retired in 1931 with the rank of consulting obstetrician and gynæcologist. On the creation of the Welsh National School of Medicine in the University of Wales in 1921, he was appointed professor of obstetrics and gynæcology, a post which he occupied for ten years. From the time when he went to Cardiff he had been the pioneer of obstetrics and gynæcology in South Wales. He built up a large private and hospital practice and impressed both academic and local authorities with the importance of this subject, especially in relation to maternal mortality and to maternity and child welfare.



[Western Mail and Echo

As a clinician Sir Ewen was conscientious, thorough, and conservative, while his teaching was clear and to the point. His ability to recall incidents in his vast clinical experience and to deduce general principles from these added to the weight of his instruction, while his long-headed sagacity in surveying the various aspects of a difficult case was illuminating. It was, however, as an administrator and in council that his greatest gifts appeared; and this led to his being a member of innumerable committees and chairman or president of many of them. He was for years a member of the council of the British Medical Association and was chairman of the representative body from 1910 to 1912—during the stormy days when Lloyd George's National Health Insurance Act was being hotly debated. In 1928 when the annual meeting of the B.M.A. was held in Cardiff, he was elected president and later he became a vice-president. His local work for the association included the presidency of the South Wales and Monmouthshire Branch, and the chairmanship of the Cardiff Division and of the contract practice subcommittee of the Welsh Committee. He was one of the founders of the Royal College of Obstetricians and Gynæcologists, of which he was a foundation fellow. For many years he served on the college council, and in 1935 he was elected president, an office which he occupied with his usual ability and distinction until 1938. In the early formative years of the college his wise counsel and far-seeing wisdom were of great value in the guidance of affairs, and he was largely responsible for laying the firm foundations from which the college has grown to its present position. The honorary fellowship of the college was conferred on him in 1947 when the college received its Royal Charter. When the National Health Service was introduced in 1948 he was appointed one of the original members of the board of governors of the United Cardiff Hospitals and he served in this capacity until shortly before his death.

In the first world war Maclean was adjutant to the Third Western General Hospital in Cardiff with the rank of Major R.A.M.C.(T.F.), and in 1917–18 he commanded the Eaton Hall Officers' Hospital, at Chester, with the rank of lieutenant-colonel, and later the Third Western General Hospital.

Many honours were conferred upon him. He was a justice of the peace for the City of Cardiff and a deputy lieutenant of the County of Glamorgan. In 1927 the American College of Surgeons gave him its honorary fellowship, while in 1935 he received the honorary degree of M.D. from the University of Melbourne in the course of a world tour which he undertook on behalf of the British Medical Association. He received the honorary doctorate of laws from Edinburgh University in 1933 and from the University of Wales in 1947. The University of Manchester made him an honorary D.SC. in 1949. He was knighted in 1923.

"Sir Ewen Maclean," writes a friend, "was one of the old school, but he was one of the best examples of that school. He witnessed the growth and development of modern obstetrics and gynæcology and was always alive to the significance of each advance in that subject. Personally he was one of the most charming of men—kindly, urbane, and patient. His ethics and his rules of social conduct were rigid and he looked for similar qualities in those with whom he worked. A loyal and delightful colleague, it was a pleasure to work with him; and those of us who will not again see his tall, distinguished figure will for long mourn a staunch friend and an outstanding public personality."

Sir Ewen, who was a bachelor, was the younger brother of Sir Donald Maclean, at one time President of the Board of Education.

I. WALKER HALL

M.D. Manc.

Dr. Walker Hall, emeritus professor of pathology in the University of Bristol, died at his home at Godalming on Oct. 9, at the age of 86.

He qualified at Manchester in 1899 and three years later took his M.D. In 1906 he left Manchester, where he was lecturer in pathology, to go to Bristol as pathologist and bacteriologist to the Royal Infirmary; and in 1909 he became the first professor of pathology in the university. He relinquished the chair in 1933 to become the first director of the department of preventive medicine at Bristol, and until his retirement in 1936 he worked, in conjunction with Prof. R. H. Parry, to build up the new department which included the laboratories of public health, the public analyst, and clinical pathology.

Dr. Walker Hall's work in the interests of public health became known throughout the world. During the early part of the century he worked in close collaboration with Dr. D. S. Davies on the problem of the typhoid carrier; and, following in the footsteps of William Budd, he aided the medical profession in the problem of typhoid fever. In 1916 he made valuable laboratory investigations in connection with cases of bubonic plague in Bristol: over four hundred rats were examined, and the Indian flea, which is the common transmitter of the plague bacillus, was found. His interest in the bacteriological control of pasteurised milk is shown by the number of his articles on the subject.

He retired seventeen years ago, and began to study for the Bar, but his studies had unfortunately to be discontinued owing to the illness of his wife.

R. H. P. writes: "He was a most loyal chief, and all those who knew him in the early days of the preventive medicine department thought very highly both of his personal attainments and of his administrative skill. He was a great lecturer and teacher and a most charming companion."

WILFRED JOHN PURDY

M.B. Edin.

Dr. Purdy, who died on Aug. 28, was best known for his work on filterable fowl tumours, largely carried out in collaboration with the late W. E. Gye. He was born in 1882, in Derbyshire, the son of a lace manufacturer. On leaving school at 15 he at first helped his father, and was later apprenticed to a lithographer with whom he acquired skill in draughtsmanship which proved useful in later life. After another period in the lace trade, he

went to Edinburgh at the age of 27 to study medicine, and soon became attracted to pathology. At Edinburgh he was much influenced by a fellow student, W. E. Gye (then W. E. Bullock), who came from the same part of Derbyshire. After two years of clinical medicine he was called up for military service in the first world war. At the end of the war an educational grant enabled him to be trained in pathology under Shaw Dunn.

He joined the scientific staff of the Medical Research Council in 1920 and worked with Gye on the poisonous properties of colloidal silica; they published three papers together. Then after some work on measles, yielding negative results, Purdy joined in Gye's work on fowl tumours. In 1925 Gye and Barnard published their paper on the ætiology of tumours; in this Gye maintained that for transmission of fowl tumours with filtrates two factors were necessary, a non-specific virus and a "specific factor" derived from cells; there were wide implications concerning the ætiology of cancer in general. Work supporting this theory was published in 1931 in a book, *The Cause of Cancer*, by Gye and Purdy. For about 17 years, until 1942, Purdy worked with Gye to test the theory, largely by immunological techniques, and by himself he published several papers on the transmission of fowl tumours in ducks. Purdy was, to Gye, a very loyal colleague and not a little of a hero-worshipper. His work was most meticulous and every step was examined most critically. His careful drawings and charts were a great asset in his published papers.

When Gye became director of the Imperial Cancer Research Fund Laboratories, Purdy, still a member of the Medical Research Council staff, was seconded to work with him. On his retirement in 1942, he went to work in clinical pathology at Beverley in Yorkshire and later, in 1946, helped to build up a pathological department at the Margate and District General Hospital.

Dr. Purdy was of a retiring disposition and rarely spoke at meetings. He was helpful and friendly to all who knew him; and even those who disagreed with his views about cancer had a high regard for his qualities. He is survived by his wife.

JOHN HENRY BADCOCK
F.R.C.S., F.D.S.

Mr. Badcock was 89 years of age when he died at Malvern on Sept. 23. Inevitably, most of his coevals have predeceased him; but many of a younger generation are in a position to appreciate his services to the dental profession.

He received his professional education at the Royal Dental and Charing Cross Hospitals, and obtained the qualifications of L.D.S. in 1887 and M.R.C.S. in 1890. In 1891, only a year after qualifying in medicine, he was appointed an assistant dental surgeon at Guy's Hospital, and in 1895 he became dental surgeon. In 1893 he had been made lecturer in operative dental surgery, and in connection with this lectureship he introduced the subject of orthodontics, in which throughout his professional life he took the deepest interest.

In 1904, to the great regret of both his colleagues and students, Badcock resigned from Guy's Hospital—a somewhat sudden step which there is reason to believe he afterwards regretted. Nevertheless he found plenty of scope in connection with his profession, apart from actual practice, and he used it to the full. He was actively associated with the affairs of the British Dental Association, of which he had been elected a member in 1893, and he served as its treasurer from 1919 to 1924 and president in 1925. His interest in orthodontics led, in 1908, to the foundation of the British Society for the Study of Orthodontics, of which he was the first president, and in 1931 he presided over the second International Orthodontic Congress. His work in dentistry was recognised by the Royal College of Surgeons when it elected him to the fellowship in 1932 and to the fellowship of the Faculty of Dental Surgery on its institution. Among other distinctions, he became president of the odontological section of the Royal Society of Medicine in 1917, and examinerships and many other appointments helped to make his life an extremely busy one.

Badcock was a notable teacher and was prodigal of ideas, which either he or others brought to fruition: a famous example was the well-known Badcock screw—as familiar in orthodontics as the Spencer Wells forceps in general surgery. A man of considerable intellectual powers, he loved beautiful things and enjoyed outdoor pursuits such as walking, climbing, and boating. He had great charm, was quiet and gentle in manner, and was kind and helpful to a degree. His teaching and example influenced, and will continue to influence, many who knew him.

JOHN VINCENT FORREST
C.B., C.M.G., M.B. Edin.

Colonel Forrest, who died at his Belfast home on Oct. 10, will be chiefly remembered in Ulster for his association with the Royal Victoria Hospital, Belfast, of which he was medical superintendent from 1920 till 1930. His success in this office owed much, however, to his previous wide experience and distinguished career.

Born in 1873, he was the son of the late Mr. William Forrest, a member of the Legislative Council of Antigua in the Leeward Islands. He studied medicine at Edinburgh University, and after qualifying M.B. in 1894 joined the Army Medical Services. He served both in the South African war and in the first world war. In the 1914–18 war he served first on the staff of the D.D.M.S. at Boulogne, and in 1917 he was appointed D.D.M.S. to the Italian Expeditionary Force. For his services he was appointed C.M.G. in 1916, and C.B. in 1919, and he was six times mentioned in despatches.

It was with this solid achievement behind him that he started in 1920 his ten years' work at the Royal Victoria Hospital, with all the problems presented by a continually expanding institution. These were days when paper counted much less than personality, and when administration, by its very elasticity and lack of tabulated regulations, made the character and judgment of those responsible vitally important. His great experience and sound judgment, together with a quiet but persuasive way with his lay and medical colleagues, levelled out many an obstacle. On his retirement in 1930, the management committee and staff paid a tribute to his services by a donation to the building fund of the new maternity hospital and nominated him as a life governor.

Colonel Forrest is survived by his wife, with a son and a daughter.

Appointments

FOXELL, CAROL, M.B. Lond., D.C.H.: asst. M.O., public-health department, London County Council.

GOODDY, WILLIAM, M.D. Lond., F.R.C.P.: honorary consultant neurologist, The Italian Hospital, London.

TOMKINSON, J. S., M.B. Birm., F.R.C.S., M.R.C.O.G.: part-time asst. obstetric surgeon, Guy's Hospital, London.

WILLIAMS, R. J., M.A. Camb., F.R.C.S.: consultant surgeon, Merthyr and Aberdare H.M.C.

The Hospital for Sick Children, Great Ormond Street, London:

CANDY, JOSEPHINE, M.B. Wales: resident anæsthetic registrar.

LOCKHART-MUMMERY, H. E., M.CHIR. Camb., F.R.C.S.: part-time senior surgical registrar.

MACKAY, MARIA, M.B. Manc.: junior resident anæsthetist.

PALLOT, DOREEN, M.B. Lond., D.A.: resident anæsthetic registrar.

ROTHFIELD, N. J., M.B. Sydney, D.C.H.: house-physician.

Liverpool Regional Hospital Board:

CADMAN, E. F. B., M.D. Wash. Univ., St. Louis, M.R.C.P., D.C.H.: part-time visiting consultant physician, hospitals in the Southport area.

CARMICHAEL, J. H. E., M.D. Lpool, D.M.R.D.: asst. radiologist, East Liverpool area.

MCCAREY, A. G., M.D. Glasg., D.M.R.D.: consultant radiologist, East Liverpool area.

Newcastle Regional Hospital Board:

BUTTERWORTH, H. C., M.B. Durh., D.A.: consultant anæsthetist, Darlington H.M.C. group.

CRAIGEN, W. G. C., M.B. Aberd.: asst. ophthalmologist (S.H.M.O.), Sunderland H.M.C.

EVERITT, ELIZABETH, M.B. Lond., D.A.: consultant anæsthetist, Sedgefield General Hospital.

KEMPSEY, E. P., M.B. Lond., F.R.C.S.: consultant surgeon, Sunderland H.M.C. group.

South Western Regional Hospital Board:

CROSS, E. G. W., M.R.C.S., D.P.M.: asst. physician in psychiatry, Bristol mental hospitals.

HOFFMAN, J. N., M.B. Lond.: asst. chest physician, Bristol clinical area.

LUKIANOWICZ, NARCYZ, M.D. Lwow: asst. physician in psychiatry, Bristol mental hospitals.

Notes and News

CLINICAL RESEARCH AT THE MIDDLESEX

THE new Institute of Clinical Research, which was opened this week as a part of the Middlesex Hospital Medical School, will provide a vantage-point to which the clinician may withdraw for a spell to consolidate and develop the ideas which have sprung from his day-to-day work and which he has perhaps had to put aside for want of time or means to investigate them further. The board of governors of the hospital have decided to devote a considerable proportion of the hospital's endowment fund to research, and, with the new institute in mind, they bought a modern four-storey building, which had been used as a boys' club, a few minutes' walk from the hospital; so those who are fortunate enough to work in the agreeable surroundings that have now been prepared there will be in fact detached, but not too remotely, from the busy hospital scene.

The hospital's clinical research committee will allot grants from the income of the endowment fund to individual research-workers, who will then take their place in the institute for a prescribed term. Each will be sponsored by one of the Middlesex consultants, who will supervise progress; but those who receive grants need not necessarily be members of the hospital staff. The equipment and laboratories of the institute will be at their disposal, but any additional apparatus that they need will have to be paid for from their grant or from other grants that they may hold.

The ground floor of the building is mainly taken up by six comfortable consulting-rooms where patients, chosen for investigation and follow-up in a particular piece of research, may be interviewed and examined. These rooms include one large one where a number of people can be dealt with at the same time; the plan is to use this room not only for patients but for students or other volunteers who are being used as subjects for an experiment. No great number of patients will be in the institute at any one time, so only a small (but handsomely furnished) waiting-room has been provided. On the first floor there is a common-room for informal gatherings of the staff and for occasional scientific meetings. Then there are rooms of different sizes for the research-workers, so that each may have a place to call his own. The basic furnishings of these rooms are simply a desk and a small laboratory bench; the occupant fills in the details.

By no means all the doctors in the institute will deal directly with patients, for clinical research is to be interpreted very broadly as research by clinicians. Some may need no more than one of the smaller rooms on the first floor where they can install their equipment and get straight to work on their chosen problem. Others will make many calls on the biochemical and pathological laboratories on the floor above. Attached to the biochemical laboratory is a measuring-room housing precision instruments. The two laboratories will be in the immediate charge of technicians from the corresponding departments of the hospital and they will keep in close touch with the parent laboratory. A particularly useful feature of the third floor is the workroom where apparatus can be made or modified to meet a special need; clearly, it is a much cheaper proposition to adapt standard equipment to do the job in hand rather than call on the manufacturers to make a new instrument. Demands on the workroom are expected to be heavy. On the top floor there is accommodation for laboratory animals, with a roomy run for the dogs on the roof. X-ray plant is installed in the basement: in the ordinary way this will be used to examine those animals whose response to an experiment can be judged radiologically, but a generous transformer has been selected which can supply any kind of X-ray tube that may be brought by someone doing research that is predominantly radiological.

The institute, which is under the direction of Prof. Alan Kekwick, strikes out on a new and promising line. For one thing it will give opportunities for a more deliberate and better planned approach to clinical research, and, for another, it will help to emphasise to newcomers the importance of giving a full explanation to the patients who have been invited to take part in a research inquiry.

PREVENTION OF BARBITURATE POISONING

IN the *British Medical Journal* of June 13, 1953 (p. 1335), Dr. E. Mackernan suggested that, to prevent deaths from overdose of a barbiturate drug, each tablet should contain a small amount of ipecacuanha which would act as an emetic when too many tablets were taken. British Ethical Proprietaries (Middle Street, Taunton, Somerset) inform us that they produce a range of standard barbiturates "made safe in this manner." They say:

> "Our experimental trials have shown that it is possible to add a quantity of emetic in the form of the alkaloids of ipecacuanha, which has no significant pharmacological activity when ordinary quantities of tablets are used. On the other hand, if an overdose is taken an emetic dose is obtained before the accompanying barbiturate reaches lethal amounts. Moreover the action of the emetic, which is due to direct gastric irritation, is sufficiently prompt to ensure the elimination of the bulk of the barbiturate before absorption occurs."

DANGEROUS DRUGS ACT

THE Home Office has issued an order[1] which applies part III of the Dangerous Drugs Act, 1951, to *N*-allylnormorphine (the approved name is nalorphine). From Nov. 1 this drug will come within the provisions of the Act and the regulations made thereunder.

NEW MATERNITY BENEFITS

THE new maternity benefits,[2] introduced by the National Insurance Act, 1953, will be available to mothers whose babies are born on or after Monday, Oct. 26. The new benefits are:

Maternity grant of £9 for each baby born. This replaces the present maternity grant of £4 and attendance allowance of £1 a week for four weeks. The attendance allowance has been abolished.

Home confinement grant of £3 for mothers whose babies are born at home or elsewhere than in a hospital or institution where maintenance is paid for from public funds. This is an entirely new benefit.

Maternity allowance of £1 12s. 6*d*. for eighteen weeks for women in paid work and paying full national insurance contributions during the year starting 15 months before the baby is born. This allowance (total £29 5*s*.) replaces the present allowance of £1 16*s*. for thirteen weeks (total £23 8*s*.) paid at present to women doing paid work.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

THE President of this society for the session 1953–55 is Dr. F. NORMAN WHITE, whose distinguished career began in the Indian Medical Service and included a long period in the Health Organisation of the League of Nations and in the School of Hygiene in Athens. In his presidential address on Oct. 15 Dr. White recalled some of his experiences of the major epidemic diseases, of which the first was the pandemic of influenza that attacked Europe in the spring and summer of 1918, and in the autumn swept through India, where failure of the monsoon had already caused hardship through food shortages. Nowhere in the world was the epidemic so severe as in India, and in two months it caused 6 million deaths there. Rural areas suffered more than towns, and the disease was especially severe on young people. By November, 1918, the epidemic was over, but Dr. White, who during this time was doing the work of the sanitary commissioner of the government of India, and upon whom lay most of the responsibility for coping with the emergency, showed that it had been a tragedy the magnitude of which was not perhaps appreciated by those living outside India.

He went on to recall the great outbreak of typhus and relapsing fever which, in 1920, spread from Russia to Poland and the neighbouring countries and which came as a grave and immediate threat to war-devastated Europe. Dr. White had been invited to take charge of an international epidemic commission set up by the council of the League of Nations, and in the autumn of that year he left for Poland with Madsen, then the director of the State Serum Institute in Copenhagen, and Pottevin, of the Office International d'Hygiène Publique. Conditions were appalling; there was typhus in every village, sometimes in every house, and refugee trains brought more victims, alive and dead. Relapsing fever and cholera added to the miseries of these disorganised countries, and the possible preventive measures were few and called for much labour and organisation. Dr. White mentioned some of the great figures who directed the relief organisations—Nansen, Rajchman of Poland, and Tarassevitch of Russia—and he paid tribute to the Russian doctors and nurses who worked at such desperate risk to themselves in apparently hopeless circumstances.

In 1922 the League of Nations sent Dr. White on a mission to the Far East, where he met a number of outstanding personalities, such as Shiga and Yersin, the discoverer of the plague bacillus. This tour led him to suggest the creation of an epidemiological intelligence bureau at Singapore, under the direction of the League of Nations. The bureau was founded

1. The Dangerous Drugs Act 1951 (Application) Order, 1953. S.I. 1953 no. 1453. H.M. Stationery Office. 2*d*.
2. See *Lancet*, 1953, i, 634.

in 1925 and still remains active, to demonstrate by its permanent value the foresight of its founder.

Dr. White's story was one of great events dealt with courageously in days when insecticides and antibiotics were unknown and when epidemics were terrible in their sweep and power. He spoke warmly of the able men who responded to the challenge of these formidable diseases; and, though Dr. White put a modest estimate on his own part in the battle, it was clearly a very important one.

University of London

At recent examinations the following were successful:

D.C.P.—P. B. Adamson, J. D. Arneaud, M. C. Berenbaum, L. R. Chapman, Siri Krishan Chopra, Manoranjan Datta, B. R. Davis, N. U. C. Godfrey, W. F. Hunter, Samrit Jatinandana, N. C. March, Mary Ralston, W. A. Russell, M. P. K. Shoobridge, J. C. Squires, H. J. Woodliff.

D.P.H.—P. P. M. Browne, James Clearkin, K. A. Rahman, J. T. Subramaniam, D. R. Thomson, David Ungar.

D.T.M. & H.—Paja Sirivorasarn.

Scottish Conjoint Board

At recent examinations for the diploma of licentiate of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following were successful:

J. A. Childs, J. C. Douglas, Ellis Haniford, Santosh Khosla, T. J. McA. Kirby, G. D. B. Lindsay, Patrick Murray, Marie J. Ribchester, Mohammad Hasan Rizvi, W. J. Ross, R. MacG. Wight.

Royal College of Obstetricians and Gynæcologists

At the annual dinner of the college held in London on Oct. 16, the President, Mr. A. A. Gemmell, referred to some of the college's plans. Next year was its silver jubilee and an attractive programme in celebration was being arranged for the days July 13–15, when one of the functions would be attended by Queen Elizabeth the Queen Mother. The college museum continued to expand: a steady flow of exhibits was coming in and it was clear that the potential existed to create one of the best museums of obstetrics and gynæcology in the world. The library must still concentrate on acquiring historical works until the college had more roomy premises. To enable the college to enlarge its quarters, much more money was needed, and it had been decided to reopen the appeal fund next year, with a new building as the objective. Sir Ronald Weeks would preside over the appeal. Mr. Gemmell was replying to the toast of The College, proposed by Sir Francis Walshe, F.R.S. Prof. J. F. Cunningham welcomed the guests, who, as Mr. Iain Macleod, Minister of Health, observed in his reply, considerably outnumbered the hosts. Mr. Macleod hoped that Sir Ronald would let him know if there was any way in which he could help, directly or indirectly, in the work of the college's appeal for funds. A distinguished visitor from the Commonwealth, Sir Edmund Herring, lieutenant-governor of Victoria, also replied in friendly terms for the guests. He would, he said, like to see more people from Great Britain making the journey to Commonwealth countries to see what the inhabitants were like and how they lived; he felt sure that two-way traffic was one of the best ways of drawing together the Commonwealth family.

At a meeting of the council on Oct. 16, with Mr. Gemmell in the chair, the following were admitted to membership:

L. J. Abramowitz, Subrahmanyan Alankaram, W. J. R. Anderson, G. S. Andrew, A. K. Bose, J. C. Brace, T. J. Buckley, Samuel Burke, R. K. Burt, J. G. Cameron, R. S. Casement, P. W. Christina Chow, Maureen D. Connolly, R. L. Edwards, M. B. Flanagan, F. M. C. Forster, Kathleen M. Frith, M. C. G. Grant, P. B. Guastalla, R. H. J. Hamlin, J. W. S. Harris, J. M. Holmes, C. A. Jones, R. L. Jones, I. R. Macdonald, Betty Mallace, G. A. Manly, D. N. Menzies, M. C. Michelow, J. J. Nattrass, H. H. Neifeld, F. N. Neser, J. P. O'Dwyer, D. R. Patnaik, Clara Phillips, B. G. Pickles, William Rotheram, J. S. Scott, J. M. Stewart, R. A. Struthers, Valerie M. Thompson, C. J. Thornberry, Harry Ulman, C. G. Wilson.

Royal Sanitary Institute

At a meeting to be held in the town hall, St. Helens, at 10.30 A.M. on Thursday, Nov. 5, Mr. M. Ward will read a paper on Sewerage Problems in Subsiding Areas, and Dr. G. O'Brien and Mr. D. W. Richardson will speak on Acquisition and Modernisation of a Common Lodging House. At 2.30 P.M. on Wednesday, Nov. 11, Mr. E. T. Wilkins, PH.D., will open a discussion at the institute, 90, Buckingham Palace Road, London, S.W.1, on Air Pollution and the London Fog of December, 1952. An exhibition on smoke and smog will be opened on Monday, Nov. 9, in the museum of hygiene at the institute. The exhibition will remain open until Dec. 5.

Royal College of Surgeons of England

On Oct. 20 H.R.H. the Duke of Edinburgh was admitted to honorary fellowship of the college.

Mr. Geoffrey Keynes will deliver the Cecil Joll lecture on Thursday, Nov. 12, at 5 P.M., at the college, Lincoln's Inn Fields, London, W.C.2. He will speak on Investigations into Thymic Disease and Tumour Formation. Sir Reginald Watson-Jones will deliver the Bradshaw lecture on Wednesday, Dec. 9, at 4 P.M., at the college. His subject will be Fracture Treatment in the Next Half Century. On Thursday, Dec. 10, at 5 P.M., Mr. St. J. D. Buxton will deliver the Robert Jones lecture. He will speak on Arthroplasty.

Faculty of Anæsthetists.—Dr. Frankis T. Evans will deliver the Frederic Hewitt lecture at the college, Lincoln's Inn Fields, London, W.C.2, on Friday, Oct. 30, at 4.30 P.M. He will speak on Freedoms of Anæsthesia.

Royal College of Physicians of London

On Oct. 16 the Bisset Hawkins medal was presented to Dr. W. N. Pickles, of Aysgarth. The citation ended as follows:

"As a student of epidemiology, he stands in the forefront. But perhaps his outstanding achievement is the demonstration that scientific observation and deduction is not only possible under the pressure of a busy general practice, but is a constant stimulus to the quality of the service that the general practitioner can give to his patients."

Renal Association

At a meeting of this association to be held on Wednesday, Oct. 28, at the Ciba Foundation, 41, Portland Place, London, W.1, at 4.30 P.M., Prof. E. B. Verney, F.R.S., Dr. B. E. Miles, and Dr. A. A. G. Lewis will open a discussion on Emotion and Renal Function.

Bathing-pool for Paralysed Patients

An anonymous gift of £5000 to provide a bathing-pool at King Edward VII Hospital, Sheffield, for the treatment of patients paralysed by poliomyelitis has been made to Sheffield Regional Hospital Board. Earlier this year it was decided that a new physiotherapy department would be provided, but that a pool would have to wait until there was more capital.

Charing Cross Hospital Dinner

The annual dinner, held in London on Oct. 10, was attended by well over 200 members of the staff and past and present students. Dr. C. M. Scott, proposing The Medical School, spoke of its progress and of the happy atmosphere which always animated staff and students. Dr. E. C. Warner, the dean, said that the school was again able to accept 1st M.B. students and thus covered the whole course for medical degrees. The facilities for clinical instruction had been extended by providing special demonstrations at the Queen Elizabeth Hospital for Children, by arranging for domiciliary midwifery, and by enabling students to live and study for three weeks in the homes of general practitioners. He mentioned that in the past three years five former students had obtained the degree of master of surgery—a number greater than had been attained by any other school. Mr. David Trevor proposed the health of Mr. Norman Lake, the retiring senior surgeon, and of Dr. H. W. C. Vines, who is retiring from the chair of morbid anatomy. Mr. Lake, he said, had been connected with the school since he entered as a student in 1906, and had been senior surgeon for over twenty years—a period believed to be longer than that of any of his predecessors: in addition to his distinction as a surgeon, he was a scientist of repute and an engineer of considerable skill. Professor Vines, as dean in the years following the late war, had had the very responsible task of rebuilding the school, and he had been able to bring the departments of anatomy and physiology back to Charing Cross. Subsequently he had been chairman of the planning committee, which had got as far as setting out detailed working plans of the new hospital and medical school. Mr. Lake and Professor Vines, in reply to the toast, made speeches which will long be remembered by those who were present. On behalf of the staff and students, Lord Inman, who presided, made presentations to Mr. Lake and Professor Vines. Of the funds collected, the greater proportion will be used to establish a Norman Lake prize in final-year surgery and a Prof. H. W. C. Vines prize in pathology.

In our advertisement columns this week application is invited for a post as junior assistant editor of *The Lancet*.

Royal Society of Medicine

On Oct. 16, Mr. A. T. Glenny, F.R.S., received the Jenner medal for his outstanding contribution to the prevention and control of epidemic diseases, notably diphtheria.

Empire Rheumatism Council

Dr. Otto Steinbrocker (New York) will be the guest lecturer in the council's weekend course to be held at the Arthur Stanley Institute, Peto Place, Marylebone Road, London, N.W.1, on Nov. 13 and 14.

Reciprocal Social Security

A reciprocal agreement on social security between the United Kingdom and the Grand Duchy of Luxembourg was signed on Oct. 13. The agreement will enable national insurance pensions and industrial injuries benefits to be paid in Luxembourg, while the corresponding benefits of the Luxembourg social insurance schemes will become payable in the United Kingdom. Moreover, national insurance contributions paid in both countries will be taken into account for the purpose of benefits in either country. The agreement, which is subject to ratification, is expected to come into operation next summer.

British Medical Students' Association

This association is holding its annual general meeting from Nov. 5 to 7 in Bristol. The annual ball will be held on Friday, Nov. 6. Further particulars may be had from D. I. D. Hodge, c/o M.C.R., Royal Infirmary, Bristol.

Congrès International de Médicine Sportive

The tenth international congress of medicine as applied to sport will be held in Belgrade on May 19–22, 1954. Further details may be obtained from the secretary-general, Dr. V. Smodlaka, Belgrade, Deligradska, 27, Yugoslavia.

Frenchay Hospital, Bristol

New operating-theatres and extensions to the department of neurological surgery at Frenchay Hospital were opened by Sir Geoffrey Jefferson, F.R.S., on Oct. 14. The two new theatres will more than double the present operating capacity, and the neurosurgeons will be better placed to deal with an emergency case which arrives when a long elective operation is in progress. The theatres are air-conditioned and equipped with pressure-steam sterilisers. The department is the base for the neurological service of the South-western Hospital Region.

Diary of the Week

OCT. 25 TO 31

Monday, 26th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. C. C. Ungley: Rôle of Vitamin B_{12} and other Hæmopoietic Factors in Megaloblastic Anæmias.

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Paul F. Russell (Rockefeller Foundation): Man's Mastery of Malaria—the Unfolding of Malaria Ætiology. (First of five Heath Clark lectures.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Section of Odontology.* Mr. Arthur Bulleid: The Microbe Hunters. (Presidential address.)

ROYAL EYE HOSPITAL, St. George's Circus, S.E.1
5.30 P.M. Miss J. M. Dollar: Management of Cataract.

INSTITUTE OF CHILD HEALTH, Hospital for Sick Children, Great Ormond Street, W.C.1
5 P.M. Prof. E. Husfeldt (Copenhagen): Hiatus Hernia in Adults and Children. (Alex Simpson Smith lecture.)

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. H. J. Seddon, Dr. W. Ritchie Russell: Treatment of Early Stages of Poliomyelitis.

MANCHESTER MEDICAL SOCIETY
5 P.M. (Dental Hospital, University of Manchester.) *Section of Odontology.* Mr. Colin Cooke: Dentistry and the Social Services. (Presidential address.)
9 P.M. (Medical School, University of Manchester.) *Section of General Practice.* Dr. R. W. Fairbrother: Problems of Antibiotic Treatment in General Practice.

Tuesday, 27th

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. Russell: The Unravelling of Malaria Therapy. (Second of five Heath Clark lectures.)
6 P.M. (Birkbeck College, Malet Street, W.C.1.) Prof. W. S. Bullough, PH.D.: History of Hormones.

ROYAL SOCIETY OF MEDICINE
5.30 P.M. *Section of Experimental Medicine.* Dr. Audrey Smith. Dr. J. E. Lovelock, Prof. P. B. Medawar, F.R.S., Dr. P. L. Mollison: Survival of Tissues at Low Temperatures.
8 P.M. *Section of Medicine.* Sir Henry Cohen: Evolution of Concept of Disease. (Presidential address.)

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. S. C. Gold: Allergy in Diseases of the Skin.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (Medical School, University of Manchester.) Mr. R. L. Newell: History of Urinary Calculi.

WEST END HOSPITAL FOR NERVOUS DISEASES
5.30 P.M. (40, Marylebone Lane, W.1.) Minton: Ocular Manifestations in Nervous Diseases.

Wednesday, 28th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. G. F. Marrian, F.R.S.: Steroid Metabolism. (First of three lectures.)

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. Russell: Development of Malaria Prophylaxis. (Third of five Heath Clark lectures.)

ROYAL SOCIETY OF MEDICINE
5 P.M. *Section of Endocrinology.* Dr. Raymond Greene: Place of Endocrinology in General Medicine and Surgery. (Presidential address.)

ROYAL EYE HOSPITAL
8 P.M. Mr. B. H. Dawson: Blood-supply of Visual Pathway and its Clinical Aspects.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Immunology.

INSTITUTE OF UROLOGY, 10, Henrietta Street, Covent Garden, W.C.2
5 P.M. Mr. H. G. Hanley: Urological Problems in Pregnancy.

RENAL ASSOCIATION
4.30 P.M. (41, Portland Place, W.1.) Prof. E. B. Verney, F.R.S., Dr. B. E. Miles, Dr. A. A. G. Lewis: Emotion and Renal Function.

Thursday, 29th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Sir Ernest Finch: The Forerunner. (Thomas Vicary lecture.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON
3.30 P.M. Professor Marrian: Steroid Metabolism. (Second of three lectures.)

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. Russell: Some International Aspects of Malariology. (Fourth of five Heath Clark lectures.)

INSTITUTE OF CHILD HEALTH AND INSTITUTE OF NEUROLOGY
5.30 P.M. (National Hospital, Queen Square, W.C.1.) Dr. Paul Sandifer: Paralyses of Cerebral Origin in Early Life: Cerebral Diplegia—Clinical Types, Diagnosis and Treatment.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M. (Chelsea Hospital for Women, Dovehouse Street, S.W.3.) Mr. A. A. Gemmell: Myomectomy.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Diagnosis of Skin Infections due to Pathogenic Fungi.

CIBA FOUNDATION
5 P.M. (1, Wimpole Street, W.1.) Prof. A. von Muralt (Berne): Neurophysiology: Old and New Facts and Theories. (Ciba Foundation lecture.)

MANCHESTER MEDICAL SOCIETY
8 P.M. *Section of Anæsthetics.* Dr. H. E. Pooler: Operation Child. (Presidential address.)

HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Dr. Gordon O. Horne: Effects of Environmental Heat.

Friday, 30th

ROYAL COLLEGE OF SURGEONS
4.30 P.M. Dr. Frankis Evans: Freedoms of Anæsthesia. (Frederic Hewitt lecture.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON
4 P.M. Professor Marrian: Steroid Metabolism. (Last of three lectures.)

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. Russell: Malaria and Society. (Last of five Heath Clark lectures.)

ROYAL EYE HOSPITAL
4.30 P.M. Mr. A. J. Cameron: Recent Advances in Cataract Surgery.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Gold: Skin Testing.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, W.1
7.30 P.M. Dr. E. M. C. Dunlop, Mr. F. B. Zwink: Corneal Changes in Congenital Syphilis.

Births, Marriages, and Deaths

BIRTHS

EVANS.—On Oct. 9, at Fort Jameson, Northern Rhodesia, to Dilys (née Thornton), wife of Dr. A. J. Evans—a son.

MARRIAGES

BATES—HUTCHESON.—On Sept. 24, in London, Joah Lyon Bates, M.B., M.R.C.P., D.P.M., of Borocourt, near Reading, to Barrette Edythe Hutcheson, daughter of Dr. and Mrs. Wm. Hutcheson of Teignmouth, Devon.

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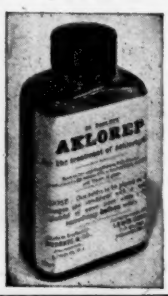

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Academic and Educational

COURSE IN BONE IN HEALTH AND DISEASE

at the
INSTITUTE OF ORTHOPÆDICS
16TH–21ST NOVEMBER, 1953

16th November Town Section	General affections of the adult skeleton	Mr. H. J. BURROWS
	The kidney and bone diseases	Dr. R. NASSIM
	General properties of bone	Dr. H. A. SISSONS
	General clinical demonstration	Mr. D. TREVOR
17th November Country Section	Chemistry of bone and biochemical diagnosis of general bone diseases	Dr. T. F. DIXON
	Response of bone and cartilage to infection	Dr. C. H. LACK
	Metabolic cases	Dr. R. NASSIM
	General clinical demonstration	Mr. J. I. P. JAMES
18th November Town Section	Osteomyelitis	Mr. H. J. SEDDON
	Rare bone infections	Mr. H. J. SEDDON
	Radiology of secondary deposits in bone	Dr. F. C. GOLDING
	Osteoporosis	Dr. F. H. STEVENSON
19th November Country Section	Congenital disorders of the skeleton	Mr. A. T. FRIPP
	General clinical demonstration	Mr. P. H. NEWMAN
20th November Town Section	Recent advance in the pathology of tumours of bone	Dr. H. A. SISSONS
	Bone tumours (clinical)	Mr. K. I. NISSEN
	Bone repair	Dr. H. A. SISSONS
	Bone grafting and internal prostheses	Mr. H. J. BURROWS
21st November Town Section	Rheumatoid arthritis	Dr. H. A. SISSONS
	Reticuloses affecting bone	Dr. R. O. MURRAY

The fee for this course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, W.1.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

AN INTENSIVE COURSE suitable for postgraduates preparing for Higher Examinations (M.R.C.O.G. and M.D.) is being held from 30TH NOVEMBER to 12TH DECEMBER, 1953, at Queen Charlotte's Maternity Hospital, The Chelsea Hospital for Women, and the Department of Obstetrics and Gynæcology at Hammersmith Hospital.

The fee for the course is 12 guineas.

A limited amount of hostel accommodation is available.

Applications should be sent to the Secretary of the Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, London, S.W.3.

INSTITUTE OF ORTHOPÆDICS

CLINICAL DEMONSTRATIONS (open without fee, to all medical men and women) will be held at the Town Section of the Royal National Orthopædic Hospital, 234, Great Portland-street, London, W.1, at 10 A.M. on SATURDAYS, 28TH NOVEMBER, 23RD JANUARY and 27TH MARCH.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 7TH DECEMBER, 1953. The following Examination will be held in July, 1954.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

EMPIRE RHEUMATISM COUNCIL

The AUTUMN WEEK-END COURSE will be held at The Arthur Stanley Institute, Middlesex Hospital, Peto-place, Marylebone-road, N.W.1 (Great Portland-street and Regent's Park Underground Stations), on FRIDAY and SATURDAY, 13TH and 14TH NOVEMBER, 1953.

LECTURE-DEMONSTRATIONS

Friday, 13th November

4.15 P.M.	Introduction	W. S. C. COPEMAN, O.B.E., F.R.C.P. (Chairman)
4.30 P.M.	Rheumatism in the Population	J. H. KELLGREN, F.R.C.P., F.R.C.S.
5.30 P.M.	Rheumatoid Arthritis	E. G. L. BYWATERS, F.R.C.P.

Saturday, 14th November

10.15 A.M.	Physical Methods in the Treatment of Rheumatic Diseases	H. A. BURT, F.R.C.P.
11.30 A.M.	Gout	G. R. FEARNLEY, M.R.C.P.
2 P.M.	Recent American Work on Rheumatism	Dr. OTTO STEINBROCKER (New York)
3 P.M.	Orthopædic Aspects of the Rheumatic Diseases	J. C. R. HINDENACH, F.R.C.S.
4.15 P.M.	Osteo-arthritis	F. DUDLEY HART, F.R.C.P.

The fee for the course will be 2 guineas, limited to 60 entries, to be received with remittance, at least 1 week before by the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

THE EMPIRE RHEUMATISM COUNCIL is holding a

SYMPOSIUM on 'BUTAZOLIDIN' (Phenylbutazone) at The Royal Society of Medicine (Barnes Hall), 1, Wimpole-street, London, W.1, on FRIDAY, 13TH NOVEMBER, 1953, at 2 P.M.

Tea will be served in the West Hall at 4.15 P.M.

Admission tickets (free) obtainable from the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

PROGRAMME

Clinical Section

Chairman: Dr. W. S. C. COPEMAN, O.B.E., M.D., F.R.C.P.

"The place of Butazolidin in the treatment of arthritis."

2.0 P.M. Dr. O. STEINBROCKER (New York).
2.20 P.M. Dr. J. P. CURRIE (Glasgow).
2.40 P.M. Dr. G. R. NEWNS (Sheffield).
3.0 P.M. Dr. I. MEANOCK, Dr. M. E. FEARNLEY and Dr. ENA BRUCK (London).
3.20 P.M. Discussion: Opened by Dr. F. DUDLEY HART (London).
4.15 P.M. Tea.

Experimental Section

Chairman: Prof. E. C. DODDS, M.V.O., M.D., F.R.C.P., F.R.S.

4.45 P.M. Prof. R. DOMENJOZ (Saarbrucken). "The Pharmacological Aspects of Butazolidin."
5.20 P.M. Dr. R. M. MASON (London). "Observations on Butazolidin and Uric Acid Metabolism."
5.40 P.M. Dr. I. G. HUMBLE (London). "Anomalies of Blood Clotting in Patients on Butazolidin."
5.50 P.M. Dr. A. HILL and Dr. S. GOOD (Aylesbury). "C-Reactive Protein and Butazolidin."
6.0 P.M. Dr. P. O. WILLIAMS (London). "Sodium and Chloride Metabolism with Butazolidin."
6.10 P.M. Discussion: Opened by Prof. G. A. H. BUTTLE (London).

THE ROYAL CANCER HOSPITAL

Fulham-road, London, S.W.3.

GORDON JACOBS RESEARCH FELLOWSHIPS

Applications are invited from medically qualified persons for a full-time Clinical Research Fellowship. Special consideration will be given to applicants wishing to carry out research in the medical aspects of protection against ionising radiation. The Grant will be £650–£750 according to age and experience, and the appointment will be for 1 year in the first instance, and may be renewable annually to a tenure of 3 years.

Applications should include: (*a*) an outline of the research proposed; (*b*) details of previous training and experience, academic qualifications and published papers; and (*c*) the names of 2 referees, and addressed to reach the House Governor not later than 16th November.

WESTMINSTER MEDICAL SCHOOL (University of LONDON). Applications are invited for the post of LECTURER IN PUBLIC HEALTH. The course of lectures begins in January and applications should be received not later than 30th November.

Further particulars can be obtained from the Secretary, Westminster Medical School, 17, Horseferry-road, S.W.1.

THE UNIVERSITY OF MANCHESTER. Rheumatism RESEARCH CENTRE. Applications are invited from persons with medical qualifications registrable in this country for the post of RESEARCH ASSISTANT in the Rheumatism Research Laboratory. The person appointed will be required to assist in research work on bone and joint pathology, and will be attached to the Department of Pathology for part-time work including some teaching. Applicants should have had previous experience in general pathology but previous experience in the pathology of bone and joint diseases is not essential. Salary on a scale £700–£1000 p.a. with membership of F.S.S.U. and Children's Allowance Scheme; initial salary according to qualifications and experience.

Applications should be sent not later than 10th November, 1953, to the Registrar, The University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the JOSEPH HUNTER CHAIR OF PATHOLOGY. The appointment is a whole-time one and the salary, which will be fixed when the appointment is made, will be in the range £2250–£2750. In addition to his teaching and research duties, the Professor will be expected to act in a consultative and advisory capacity to the pathological services of the United Sheffield Hospitals, and to be responsible for the provision, through his department, of the service in morbid anatomy required by the Royal Infirmary Unit of these hospitals. He may expect to receive from the Board of Governors of the United Sheffield Hospitals an honorary contract carrying Consultant status.

Applications (30 copies—1 copy only from overseas candidates) with the names and addresses of referees, and, if desired, copies of testimonials, should reach the undersigned (from whom further particulars may be obtained) by 12th December, 1953.

A. W. CHAPMAN, Registrar.

UNIVERSITY OF NOTTINGHAM. A Technician is required in the Zoology Department, with special responsibility for the maintenance of the Animal House and Aquaria. Salary scale £315–£450 p.a.

Applications, stating age, present post and previous experience, should be sent as soon as possible to—

H. PICKBOURNE, Registrar.

Hospital Services: Senior Appointments

ST. THOMAS'S HOSPITAL, S.E.1. Surgeon (part-time), Consultant status.

Applications (12 copies), including names and addresses of 3 referees, to the Clerk of the Governors by 14th November, 1953, for appointment commencing in November, 1954.

BOWDEN HOUSE, London-road, Harrow-on-the-Hill, MIDDLESEX. Part-time PSYCHIATRIST (Male or Female) with knowledge of application of all modern physical methods. To spend 3 whole days at Bowden House and the remaining time in hospital, academic or private practice. It is essential that he or she be resident in Bowden House and a flat and all emoluments are provided.

Applications to Secretary.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CONSULTANT DERMATOLOGIST required at the Royal London Homœopathic Hospital, Great Ormond-street, W.C.1, for 1 half-day a week. Candidates should be interested in homœopathy and preferably should be Fellows or Members of the Faculty of Homœopathy. Hospital may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 27th November, 1953.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL. Applications are invited for the appointment of CONSULTANT PLASTIC SURGEON (2 sessions a week).

Applications, stating age, qualifications, and details of present and previous appointments, with names of 3 referees, to the undersigned, by 21st November.

Colonel E. K. WOOD, House Governor and Secretary.
234, Great Portland-street, London, W.1.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) Part-time CONSULTANT ANÆSTHETIST (9 notional half-days weekly). Duties in General Surgery (3 notional half-days) in Birmingham (Dudley Road) Group; and in Thoracic Surgery (6 notional half-days)—4 notional half-days at Yardley Green Hospital (413 Beds) and 2 notional half-days at Regional Thoracic Centre, Hill Top Hospital, Bromsgrove (76 Beds). Wide experience in specialty and possession of higher qualification or D.A. required.

(*b*) **Mid-Worcestershire Group of hospitals**

Part-time CONSULTANT ANÆSTHETIST (9 notional half-days weekly). Duties at Regional Thoracic Surgical Centre, Hill Top Hospital (76 Beds); All Saints Hospital (423 Beds), Bromsgrove and as required at other group hospitals. Possession of higher qualification or D.A., and experience specialty required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 9th November, 1953.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Whole-time DEPUTY to the Regional Transfusion Director, Regional Blood Transfusion Service. Salary scale £1300–£1750 p.a. Successful candidate will assist in supervision of laboratory activities and supervise donor sessions throughout region. Opportunity for research in hæmato-serology, hæmatology and bacteriology and for clinical experience. Previous experience in transfusion centre an advantage; candidates with clinical pathology experience may apply.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 9th November, 1953. Candidates may visit Centre by appointment with Regional Transfusion Director, 15, Ampton-road, Birmingham, 15.

LEEDS REGIONAL HOSPITAL BOARD invite applications for the appointment of SENIOR CASUALTY OFFICER (whole-time) for duties at the Hull Royal Infirmary. The person appointed will be required to undertake the routine duties of the Department under the general supervision of the Consultant Orthopædic Surgeon-in-charge. The salary will be within the range of £1300–£1750 p.a. and the tenure of the appointment will be for a period not exceeding 4 years. The position will be superannuable and subject to terms and conditions of service as laid down by the Leeds Regional Hospital Board which will be similar but not necessarily identical to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary to the Board, Park-parade, Harrogate, not later than 20th November, 1953.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of CONSULTANT OTO-RHINOLARYNGOLOGICAL SURGEON for 4 notional half-days a week. The successful applicant will be required to carry out clinical and teaching duties. Candidates must possess a registrable qualification, the Fellowship of the Royal College of Surgeons of England, Edinburgh, or Ireland, and a Diploma in Laryngology and Otology. Canvassing of members of the Board or of the Advisory Appointments Committee will disqualify.

Applications, stating full particulars of nationality, age, qualifications, and details of present and previous appointments with dates, and accompanied by the names of 3 persons to whom reference may be made, should be sent by 9th November, 1953, to the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

NEWCASTLE REGIONAL HOSPITAL BOARD. Hartlepools HOSPITAL MANAGEMENT COMMITTEE. (Main hospitals:—General, West Hartlepool, 433 Beds; Hartlepools, 126 Beds; Cameron, 92 Beds; &c.) ASSISTANT PATHOLOGIST required for the above Group. Appointment whole-time, or part-time for 9 notional half-days per week. Salary scale £1300–£1750 whole-time, pro rata part-time. Further particulars may be obtained from the Consultant Pathologist, General Hospital, West Hartlepool.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. South WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. ASSISTANT OBSTETRICIAN required for the Obstetric Departments in the Maternity Units (25 Beds) in Bishop Auckland General Hospital (350 Beds) and 17 Beds in Bishop Auckland Maternity Home. The Obstetric Officer will be required to assist in the Obstetric Department (24 Beds) at Dryburn Hospital and in peripheral ante-natal clinics as required. Appointment whole-time, or part-time for 9 notional half-days per week. Salary scale £1300–£1750 whole-time, pro rata part-time. Further particulars may be obtained from the Consultant Obstetrician and Gynæcologist, General Hospital, Bishop Auckland.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer grade) to the Hospitals of the Kettering and District Hospital Management Committee. Applicants should hold the D.A. The successful candidate will be required to reside in Kettering. Applicants are invited to visit the Hospital by arrangement with the Secretary, Kettering General Hospital.

Applications (10 copies), stating age, qualifications, experience, and the names and addresses of 3 referees, should reach the Secretary of the Board, 43, Banbury-road, Oxford, by 13th November, 1953.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of ASSISTANT PHYSICIAN of Consultant status on a basis of 6 sessions per week for duty in the Gastro-intestinal Unit at the Western General Hospital, Edinburgh. This unit of 36 Beds is under the joint control of a Senior Physician and Senior Surgeon, has certain teaching duties in association with the University of Edinburgh and undertakes certain research projects. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment as CONSULTANT in Tuberculosis in Edinburgh. The person appointed will be in charge of approximately 40 adult and 20 children's beds with outpatient and contact clinics. He will be in general administrative charge of the Central Outpatient Clinic in Edinburgh. The post will be associated with the Department of Tuberculosis and Diseases of the Respiratory System of the University of Edinburgh, and the holder will be expected to undertake teaching and research, especially in regard to the epidemiological and preventive aspects of the diseases. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, previous experience and qualifications, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, from whom further particulars can be obtained, within 30 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment between the Tuberculosis and Pneumoconiosis Units at Bangour Hospital, Broxburn. The salary will be on the scale £1300–£1750 p.a. The appointment is subject to the terms and conditions of the National Health Service.

Applications (10 copies), giving particulars of age, previous experience, and qualifications, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time CONSULTANT BACTERIOLOGIST based at the Victoria Infirmary, Glasgow, with duties in Ayrshire and as required in the Victoria Infirmary sector. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for 3 appointments as Part-time CONSULTANT SURGEONS on the basis of 6 sessions weekly. 2 of these vacancies are based at the Western Infirmary, Glasgow, and 1 at the Royal Infirmary, Glasgow, and all may have duties elsewhere in the Region as may be arranged. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (20 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time CONSULTANT RADIOLOGIST based at Ballochmyle Hospital, Mauchline, and with Regional duties as may be arranged. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time CONSULTANT THORACIC SURGEON for Regional duties as required. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for 4 appointments as Part-time CONSULTANT PHYSICIANS on the basis of 6 sessions weekly. 3 of these vacancies are based at the Western Infirmary, Glasgow, and the fourth at the Royal Alexandra Infirmary, Paisley, and all may have duties elsewhere in the Region as may be arranged. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (20 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointments as CONSULTANT ANÆSTHETIST in the undermentioned groups of hospitals :—

Sidcup and Swanley.
Lewisham.
Dartford.

A total of 16 notional half-days a week is required and appointments for either whole-time service, maximum part-time service, or a smaller number of sessions will be made within that total. Candidates must have had wide experience in anæsthetics and hold the Diploma in Anæsthetics. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, number of sessions for which available, together with the names and addresses of 3 referees, to the Secretary Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 7th November, 1953.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment as Part-time CONSULTANT ANÆSTHETIST to undertake 2 notional half-days a week for Thoracic Surgery at Preston Hall Hospital, British Legion Village, Maidstone, Kent. The duties will occupy 1 whole-day on the Thursday of each week. Candidates must have had wide experience in anæsthetics and hold the Diploma in Anæsthetics. Applicants may visit the hospital concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 7th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time or maximum Part-time CONSULTANT ORTHOPÆDIC SURGEON required for the Harlow Wood Hospital and associated clinics (328 Beds).

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT PATHOLOGIST required with duties at the Mansfield Hospitals and Harlow Wood Orthopædic Hospital.

Application forms and further details obtainable from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT ANÆSTHETIST required for the City General Hospital, Sheffield (682 Beds), and the Barnsley Hospitals (Beckett Hospital, 182 Beds : St. Helen Hospital, 220 Beds). The City General Hospital has teaching affiliations with the University of Sheffield. There are Professorial Medical and Gynæcological Units, a Department of Thoracic Surgery, and a Regional Cardiological Centre.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT ANÆSTHETIST required for the City General Hospital, Sheffield (682 Beds), and the Barnsley Hospitals (Beckett Hospital 182 Beds, St. Helen Hospital 220 Beds). The City General Hospital has teaching affiliations with the University of Sheffield. There are Professorial Medical and Gynæcological Units, and a Department of Thoracic Surgery and a Regional Cardiological Centre.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 21st November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT ANÆSTHETIST required for Doncaster Gate Hospital (155 Beds), and Moorgate Hospital (358 Beds), Rotherham ; and Montagu Hospital, Mexborough (123 Beds).

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT CHEST PHYSICIAN required for the Rotherham Chest Service. His duties will be mainly at the Rotherham Chest Clinic but he will also be actively associated with the Oakwood Hall Hospital (100 Beds). Salary £1300–£50–£1750.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR RADIOTHERAPIST (Consultant status) required for the Sheffield National Centre for Radiotherapy.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th November, 1953.

WARE PARK HOSPITAL, Ware, Herts. (129 Beds— Pulmonary tuberculosis.) Temporary SENIOR HOSPITAL MEDICAL OFFICER (pulmonary tuberculosis) required immediately for a period of approximately 3 months in first instance. Resident.

Applications to Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford (Tel. : Hertford 2275).

WARWICKSHIRE. SOUTH WARWICKSHIRE GROUP OF HOSPITALS. Whole-time ASSISTANT CHEST PHYSICIAN (£1300–£1750 p.a.). Duties mainly in connection with pre-operative and postoperative care of patients at Thoracic Surgical Unit, King Edward VII Memorial Hospital and Warwick Hospital. Experience specialty essential.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 9th November, 1953.

Hospital Services : Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—313 Beds.) (CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (pathology) for duties in the Area Laboratory and when necessary at other hospitals in the Group under the supervision of the Area Pathologist. Night duties and weekend duty if non-resident. Salary £670 p.a., less £130 p.a. if resident. Appointment tenable for 1 year.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 testimonials, to the Hospital Secretary.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON (resident), vacant 2nd December.

Apply Hospital Secretary (L), enclosing copies of 3 recent testimonials, by 7th November.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of MEDICAL CHIEF ASSISTANT-SUPERNUMERARY (half-time). Salary within Senior Registrar grade. The appointment is a transitional one and is for 1 year in the first instance. Candidates must have completed not less than 3 years in a Senior Registrar post and must hold the M.R.C.P. Diploma or the M.B. of a University.

Applications, stating age, qualifications with dates, nationality, and appointments held, together with copies of testimonials, by 7th November, 1953, to—

KENNETH A. F. MILES, House Governor.

COLINDALE HOSPITAL, Colindale-avenue, London, N.W.9. HOUSE SURGEON (resident when on duty) required at the above Hospital to assist in thoracic, orthopædic and genito-urinary surgery. Salary £400–£450 p.a. according to experience. Deduction at the rate of £100 p.a. for board, lodging, &c. 6 months appointment.

Apply immediately, stating age, qualifications, experience, and enclosing up to 3 recent testimonials, to Physician-Superintendent.

EAST HAM MEMORIAL HOSPITAL, Shrewsbury-road, London, E.7. Applications are invited for the post of RESIDENT OBSTETRIC OFFICER (Male or Female), third post, for 6 months commencing 1st December, 1953.

Applications, stating age and experience, together with copies of testimonials, should be sent to the Group Secretary, West Ham Group Hospital Management Committee, London, E.15, not later than 9th November, 1953.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the appointment of JUNIOR RESIDENT ASSISTANT PATHOLOGIST. Salary in accordance with the Ministry of Health scale for House Officers. The appointment is for 6 months in the first instance, duties to commence 1st December, 1953.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, as soon as possible.

GUY'S-MAUDSLEY NEUROSURGICAL UNIT. Applications are invited for the post of SENIOR HOUSE OFFICER for 6 months commencing 1st December, 1953. The unit, which is housed in the Maudsley Hospital, serves both Guy's Hospital and the Bethlem Royal Hospital.

Applications, giving details of experience, and the names of 2 referees, should be made to—

K. J. JOHNSON, House Governor and Secretary.
Maudsley Hospital, Denmark Hill, London, S.E.5.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR (first year) in the Department of Psychological Medicine (4 sessions per week). Duties to commence on 1st January, 1954.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 13th November, 1953.

HACKNEY HOSPITAL, London, E.9. (General—807 Beds.) CASUALTY HOUSE OFFICER (6 months appointment) required, to act also as House Officer to the E.N.T. Department.

Applications from second or third post candidates should reach the Group Secretary, Hackney Hospital Management Committee, London, E.9, as soon as possible.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. 3 Whole-time NON-RESIDENT REGISTRARS (general surgery) required 1st January.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 7th November.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. 8 HOUSE PHYSICIANS (Department of Medicine) required (4 on 1st January, 4 on 1st February).

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 7th November.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Ducane-road, London, W.12. Applications invited for following posts (recognised for M.R.C.O.G. and D.Obst.R.C.O.G.), vacant 1st January :—

2 HOUSE OFFICERS (gynæcology).

HOUSE OFFICER (obstetrics).

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 7th November.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for appointment as RESIDENT CASUALTY OFFICER, vacant now. The position is graded as Senior House Officer or House Officer, according to experience.

Forms of application to be obtained from the Physician-Superintendent at the Hospital.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs for RESIDENT ASSISTANT PHYSICIAN at the Country Branch, Arlesey, near Letchworth. Appointment for 1 year from 1st January, 1954, and renewable. Post graded as Senior Registrar.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned, from whom further particulars may be obtained, by 14th November, 1953.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER. Appointment for 1 year from 1st January, 1954, and graded as Registrar.

Applications, stating age, qualifications, with dates, and previous appointments held, with copies of 3 testimonials, should be sent to the undersigned not later than 14th November, 1953. THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Department of Electro-encephalography. A higher qualification, although desirable, is not essential. The successful candidate would be required to attend 5 half-days at the London Hospital and 6 half-days at the Maida Vale Hospital. The appointment will be for 1 year in the first instance.

Applications (12 copies), giving the names and addresses of 3 referees, should be addressed to the House Governor to arrive not later than 7th November, 1953.

H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR REGISTRAR to the Radiodiagnostic Department. Candidates must hold a Diploma in Radiology or Radiodiagnosis. The appointment will be for 1 year in the first instance.

Applications (12 copies), giving the names and addresses of 3 referees, should be addressed to the House Governor to arrive not later than 2nd November, 1953.

H. BRIERLEY, House Governor.

MILE END HOSPITAL, Bancroft-road, E.1. House OFFICER (obstetrics) second or third. Post recognised for M.R.C.O.G. Required for 6 months, to commence on 17th November, 1953.

Application forms, which may be obtained from Physician-Superintendent, to be returned by 31st October, 1953, with copies of not more than 3 testimonials.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE PHYSICIAN (pre-registration or first, second or third post) required for 6 months, commencing 17th November, 1953.

Application forms may be obtained from the Physician-Superintendent and should be returned by 31st October with copies of not more than 3 testimonials.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) CASUALTY AND RECEIVING DEPARTMENT. CASUALTY AND RECEIVING OFFICER (Senior House Officer) required for duty on 30th November, 1953. Resident or non-resident.

Application forms may be obtained from the Physician-Superintendent and should be returned together with copies of not more than 3 testimonials by 9th November, 1953.

KING EDWARD MEMORIAL HOSPITAL, Ealing, South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN, vacant 1st December, 1953. Preference will be given to persons seeking pre-registration post under the Medical Act, 1950.

Applications, stating age, nationality, qualifications obtained, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 31st October, 1953.

KING EDWARD MEMORIAL HOSPITAL, Ealing, South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER to a General Surgeon with some duties in E.N.T. Department, vacant 3rd December, 1953. Preference will be given to persons seeking pre-registration post under the Medical Act, 1950.

Applications, stating age, nationality, qualifications obtained, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 31st October, 1953.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2. (ST. MARY'S HOSPITAL.) Applications are invited for the post of HOUSE SURGEON (first post). Pre-registration post, vacant 1st December, 1953. Tenable for 6 months.

Applications, stating age, qualifications with dates, nationality, and copies of 3 testimonials, should reach the Secretary not later than 7th November, 1953.

PRINCE OF WALES'S GENERAL HOSPITAL. (219 Beds.) Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER RESIDENT SENIOR HOUSE SURGEON for Casualty, for a period of 6 months, vacant 4th December, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November 1953.

PRINCE OF WALES'S GENERAL HOSPITAL. (219 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SENIOR HOUSE SURGEON (third post), for a period of 6 months, vacant 14th December, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November, 1953.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the post of RESIDENT PÆDIATRIC HOUSE PHYSICIAN (third post) for a period of 6 months commencing 14th December, 1953. Post recognised for D.C.H.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November, 1953.

PRINCE OF WALES'S GENERAL HOSPITAL. (219 Beds.) Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER RESIDENT SENIOR HOUSE SURGEON, for a period of 6 months, vacant 8th December, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November, 1953.

PRINCE OF WALES'S GENERAL HOSPITAL. (219 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON (third post), for a period of 6 months, vacant 29th December, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November, 1953.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for the post of HOUSE SURGEON, vacant 7th December, 1953. Recognised pre-registration post.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials, to be sent to the Hospital Secretary by 31st October, 1953.

ROYAL FREE HOSPITAL. Applications are invited from Men and Women practitioners for the appointment of RESIDENT ASSISTANT PATHOLOGIST at the above Hospital. Salary in accordance with Ministry of Health scale for House Officers. Applicants should have held at least 1 Junior House appointment. The appointment is for 6 months in the first instance, duties commencing on 1st January, 1954.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 13th November, 1953.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER to the Rheumatology Department of the above Hospital. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is full time, non-resident, for 6 months in the first instance. Duties to commence on 1st January, 1954. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom the form should be returned not later than 13th November, 1953.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from medical practitioners for the post of SENIOR CASUALTY OFFICER at the above Hospital. The appointment is full time, resident, for 6 months, to commence on 1st January, 1954. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 13th November, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of MEDICAL REGISTRAR at the Royal Free Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and Members of the Royal College of Physicians.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 13th November, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR MEDICAL REGISTRAR at the Royal Free Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and Members of the Royal College of Physicians. The present Medical Registrar is a candidate for the post.

Formal application, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, by 13th November, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR MEDICAL REGISTRAR at the Royal Free Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and Members of the Royal College of Physicians. The present Locum is an applicant for the post.

Formal application, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 17th November, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of FIRST ASSISTANT to the Diabetic Department (Registrar grade). Duties include some general medical work. Appointment to commence on 1st January, 1954, for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing. The present locum is an applicant for the post.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 17th November, 1953.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON, vacant 1st December, 1953. The appointment will be for a period of 6 months. Salary on National Health Service scale. Candidates will be required to attend a meeting of the Medical Committee for interview.

Applications, stating age, qualifications and experience, to be addressed to the Secretary.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, London, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (second or subsequent post). A vacancy exists for a 6 months appointment, with salary as laid down for House Officer grades in the terms and conditions of service under the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty) with copies of 1–3 recent testimonials, should be sent to the House Governor immediately.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. ASSISTANTS in Outpatient Department. There are vacancies for the above to attend at Golden-square on :

Mondays at 2 P.M. ; Wednesdays at 9.30 A.M. ;
Thursdays at 2 P.M. ; Fridays at 9.30 A.M.

and at Gray's Inn-road on :

Tuesdays at 9.30 A.M. ; Wednesdays at 9.30 A.M.

These appointments offer good opportunities for acquiring clinical experience in the specialty, and will be for initial periods of 6 months and each for 2 sessions weekly. Salary according to the terms and conditions of service for hospital medical staff (paragraph 10b).

Applications, giving details of qualifications and experience, and indicating sessions for which available, should be sent to the House Governor immediately.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for the following posts :—

REGISTRAR. The appointment will be for an initial period of 1 year, and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants should have had considerable clinical experience in general surgery and in this specialty and they should hold a higher surgical qualification.

SENIOR HOUSE OFFICER. The appointment will be for an initial period of 6 months, and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants should have had good clinical experience in general surgery and in this specialty and they should preferably hold a higher surgical qualification or have passed the primary F.R.C.S. examination.

Applications for either post should give full information as to qualifications and experience, with the names of 2 referees, and should be sent to the House Governor before 9th November, 1953.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Women practitioners for the post of Part-time NON-RESIDENT CASUALTY OFFICER to attend every morning. Salary 6/11ths of the Senior House Officer's rate. The appointment is for 6 months commencing 26th November, 1953.

For form of application apply to the Secretary at the Hospital.

S.E. REGIONAL THORACIC SURGERY UNIT. (40 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (recognised for F.R.C.S.), vacant 3rd December. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery. Appointment for 6 months in first instance and may be renewed for further period. Salary £670, less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. ANN'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (Senior House Officer) to above Hospital, for a period of 6 months from 19th November, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 7th November, 1953.

ST. FRANCIS' HOSPITAL, Constance-road, East Dulwich, S.E.22. (398 chronic sick.) CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. Applications invited for appointment as SENIOR HOUSE OFFICER (medical duties). Position vacant from 25th November, 1953. Salary £670 a year, with deduction at rate of £150 a year in respect of residence.

Applications, stating age, qualifications and experience, enclosing copy testimonials, to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22, as soon as possible.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of REGISTRAR (medical or surgical) to the Neurosurgical Department at Atkinson Morley's Hospital, Wimbledon. Previous neurological experience, whilst it would be helpful, is not essential. This post is in the grade of Registrar, and the appointment is for 1 year in the first instance, with effect from 1st January, 1954.

Applications, together with the names of 2 referees, should be received by the undersigned not later than 7th November, 1953.

P. H. CONSTABLE, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of HOUSE PHYSICIAN (resident) at the Victoria Hospital for Children for 6 months with effect from 1st January, 1954. Applicants should preferably have held at least 1 post as House Officer.

Applications, together with the names of 2 referees, should reach the undersigned by 9th November, 1953.

P. H. CONSTABLE, House Governor.

ST. GILES' HOSPITAL, Camberwell, London, S.E.5. CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. Applications invited for appointment as SENIOR HOUSE OFFICER (general medical duties). Position vacant from 23rd November, 1953. Salary £670 a year, with deduction in respect of residence.

Applications, stating age, qualifications and experience, enclosing copy testimonials, to Group Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (Acute, 182 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE SURGEON. The appointment is for 6 months at a salary of £350–£450, depending upon previous experience, subject to a reduction for residential charges.

Applications, with names of 2 referees to be forwarded to the Hospital Secretary by 31st October, 1953.

ST. MARY'S HOSPITAL CHILDREN'S DEPARTMENT, PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN, St. Quintin-avenue, W.10. HOUSE OFFICER required (second or third post), medical, vacant 1st December, 1953. Pre-registration (second post) candidates considered. Recognised for the D.C.H.

Applications to the undersigned not later than 31st October.

A. C. YOUNG, Secretary.

WHIPPS CROSS HOSPITAL. (General/Acute—845 Beds.) LEYTONSTONE (NO. 10) HOSPITAL GROUP. Applications are invited from provisionally registered medical practitioners for the post at above Hospital of HOUSE SURGEON (orthopædics), second pre-registration post, vacant 30th November, 1953.

Application forms from the Hospital Secretary, Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.11, to be returned by not later than 2nd November, 1953.

WHIPPS CROSS HOSPITAL. (General/Acute—845 Beds.) LEYTONSTONE (NO. 10) HOSPITAL GROUP. Applications are invited from provisionally registered medical practitioners for the post at above Hospital of HOUSE PHYSICIAN (first pre-registration post), vacant 16th November, 1953.

Application forms from the Hospital Secretary, Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.11, to be returned not later than 2nd November, 1953.

WHIPPS CROSS HOSPITAL. (General/Acute—845 Beds.) LEYTONSTONE (NO. 10) HOSPITAL GROUP. Applications are invited from provisionally registered medical practitioners for the post at above Hospital of HOUSE SURGEON (general surgery), second pre-registration post, vacant 21st November, 1953.

Application forms from the Hospital Secretary, Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.11, to be returned by not later than 2nd November, 1953.

WEST END HOSPITAL FOR NERVOUS DISEASES (Housed at St. Charles' Hospital, Ladbroke-grove, W.10). Applications are invited for the post of SENIOR HOUSE PHYSICIAN (Senior House Officer grading), Neurology and Neurosurgery. Resident.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to reach the Hospital Secretary, West End Hospital, 73, Welbeck-street, W.1, by 29th October, 1953.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. Part-time SENIOR REGISTRAR (gynæcology) (Transitional post—see *B.M.J.*, 23rd May, 1953, Supplement, page 243), required for 1 year from 1st March.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, Hammersmith, West London, and St. Mark's Hospitals, Ducane-road, London, W.12, by 7th November.

WESTMINSTER HOSPITAL TEACHING GROUP. WESTMINSTER CHILDREN'S HOSPITAL. HOUSE PHYSICIANS (2), both second pre-registration, required for 6 months from 1st December.

Applications, with copies of testimonials, should reach the Secretary, Westminster Children's Hospital, Vincent-square, S.W.1, by 1st November.

WANSTEAD HOSPITAL, Wanstead, E.11. Applications are invited for the post, now vacant, of CASUALTY OFFICER (graded as Senior House Officer). Salary £670 p.a., with a deduction of £120 p.a. for board, lodging, &c.

Applications, giving full particulars, together with copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

ALTON, HANTS. LORD MAYOR TRELOAR ORTHOPÆDIC HOSPITAL. (350 Beds.) SENIOR HOUSE OFFICER (resident or non-resident) required primarily for the care of plastic surgery cases, but with opportunities for experience in the treatment of long-stay orthopædic cases.

Write Secretary for application form.

ALTRINCHAM. ST. ANNE'S HOSPITAL, near MANCHESTER. (53 Beds. Recognised for D.L.O. examinations. Staffed by Manchester Consultants.) NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (E.N.T.), to commence in December, 1953. This is a busy Hospital, and offers excellent scope for a suitable Officer. Salary and conditions of service as laid down by the Ministry of Health.

Applications to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ASCOT. HEATHERWOOD ORTHOPÆDIC HOSPITAL. (218 Beds—Adults and Children.) ORTHOPÆDIC REGISTRAR (resident) required. Hospital is a regional centre for all general orthopædic conditions, including fractures ; there is also a large amount of outpatient work. Post recognised for F.R.C.S. Candidates may visit Hospital by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 6th November.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Anæsthetics. Large general hospital recognised for D.A. 6 months appointment.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Royal Buckinghamshire Hospital

SENIOR HOUSE OFFICER to Accident and Orthopædic Department (which is centred upon this Hospital and comprises 48 Beds), vacant now.

Applications for the above appointment, with 2 testimonials, to Secretary-Superintendent as soon as possible.

Tindal General Hospital

HOUSE SURGEON (E.N.T.), Male or Female, vacant now. New department with high turnover and 4 Outpatient Clinics weekly. No casualty department. Recognised for F.R.C.S. and D.L.O. Post recognised for Pre-registration Service but registered practitioners are invited to apply. Applications for a locum appointment will be considered.

Applications, with 2 testimonials, to the Administrative Officer as soon as possible.

BATH. ROYAL UNITED HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to—

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BEDFORD GENERAL HOSPITAL. (435 Beds.) Bedford GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required. Post vacant 20th November, 1953. Preference will be given to persons seeking pre-registration posts under the Medical Act, 1950. The appointment offers exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. Applications are invited from registered medical practitioners prepared to undertake the following sessions in the Casualty Department :—

Tuesday and Thursday 2 P.M.–5.30 P.M.
Friday 9 A.M.–5.30 P.M.

Payment will be in accordance with paragraph 10b of the terms and conditions of service for hospital medical and dental staffs, on the basis of £175 p.a. for each half-day session. The present 4 sessions stated are not final, and may be subject to rearrangement on agreement with the Clinical Director.

Applications in writing, giving qualifications, experience, and names of 2 referees, to the Administrator.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds.) HOUSE SURGEON (Male or Female). 3 posts vacant 1st November. The appointments will be for a period of 6 months of which 2 may be spent in the Burns Unit (Medical Research Council). The Hospital is the largest Traumatic Unit in the country and treats 50,000 new patients each year. Posts are open to registered practitioners and pre-registration applicants, and offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff. Recognised for F.R.C.S.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. 2 SENIOR HOUSE OFFICERS in Anæsthetics (resident) required. Centred at Dudley Road Hospital (800 Beds), but will include duties and a period of residence at other hospitals in the Group. Appointments recognised for training for Diploma in Anæsthetics and F.F.A. R.C.S. Duties include list and emergency work in general surgery, E.N.T., obstetrics and gynæcology.

Applications with copies of 2 recent testimonials to the Secretary, Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. HOUSE OFFICER (casualty) required to commence duty on 7th January, 1954, for 6 months. Recognised for pre-registration students, but registered practitioners may apply.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 7th November, 1953. G. A. PHALP, Secretary to the Board of Governors.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical, and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of HOUSE OFFICER (medical), Male or Female, first, second, or third post held, with primary attachment to Pædiatric Ward of 24 Beds, and other duties in connection with 8 skin-beds and Casualty Department. Salary £350–£450 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating nationality, age, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (surgical), first or second post held. Pre-registration post. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, to the Hospital Secretary.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of a Whole-time Temporary REGISTRAR (anæsthetics) at the above Hospital. Post vacant from mid-October, 1953. Salary at rate of £775–£890 p.a., less £130 p.a. residential emoluments.

Applications, giving fullest details, together with copies of recent testimonials or the names of referees, to the Hospital Secretary.

BEXHILL-ON-SEA. BEXHILL HOSPITAL. (62 Beds.) 2 HOUSE SURGEONS. Posts now vacant. (A small modern hospital on the South coast.) Considerable acute surgical work and busy Outpatient Department. Excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BLACKBURN ROYAL INFIRMARY. Blackburn and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (anæsthetics) required. Resident post at above Infirmary, recognised for D.A. and F.F.A.R.C.S. with duties arranged by the Consultant-in-charge at Queen's Park Hospital, Blackburn, and Accrington Victoria Hospital.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN. ROYAL INFIRMARY. (244 acute beds.) HOUSE SURGEON required on or about 21st November, 1953. Post approved for pre-registration purposes and recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Offices, Royal Infirmary, Blackburn.

BLACKPOOL. VICTORIA HOSPITAL. (347 Beds.) RESIDENT HOUSE SURGEON. Recognised for the F.R.C.S. with main duties in the Casualty and Orthopædic Departments. This is a busy general hospital with a large Outpatient Department and the post provides excellent opportunities for gaining experience.

Applications, with references, to the Hospital Secretary.

BOSTON. GENERAL HOSPITAL. (76 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (general surgery and E.N.T.) required with relief duties in the Casualty Department. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BRADFORD ROYAL INFIRMARY.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

HOUSE OFFICER (anæsthetics), vacant now.

Salary for above posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL.

SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

HOUSE SURGEON (general and plastic), vacant now.

HOUSE SURGEON (general and casualty), vacant now.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

Salary for above 3 posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, for all above posts, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. House Officer (anæsthetics), vacant 1st December. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Surgical Tuberculosis Unit, comprising chiefly orthopædic tuberculosis, genito-urinary tuberculosis, and other non-pulmonary and combined lesions. Post tenable for 1 year. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) CASUALTY HOUSE SURGEON (1 of 3), including duties with Orthopædic and Traumatic Unit. Pre-registration post and recognised for F.R.C.S. from 1954. Vacant October.

Applications, giving details of age, experience, &c., together with names and addresses of 2 referees, to be sent to the Administrative Officer.

BRISTOL CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in General Surgery. An unfurnished flat is available. Candidates should have had previous experience in general surgery. The appointment will be held for 1 year in the first instance, and be renewable for a further year. During the first year, the successful candidate will work mainly at Weston-super-Mare General Hospital, but may be required to undertake sessions in other hospitals in the Area as circumstances require. The post is recognised for the F.R.C.S.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 7th November, 1953.

BRISTOL MENTAL HOSPITALS. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) in Psychiatry. Salary and conditions according to National Health Service scale £700–£50–£1000. The post will offer wide scope in psychiatry and its special branches, including Neurosis Centre and a Day Hospital, and the holder will have the opportunity of studying and gaining experience for the Diploma in Psychological Medicine.

Applications, with names of 3 referees, should be sent as soon as possible to the Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol, from whom further details may be obtained.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). The post offers good all-round experience under Consultant staff and is recognised for the Diploma in Anæsthetics. Salary £670 p.a. Resident accommodation is available.

Applications, with 3 references, to Group Secretary, Burnley General Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN vacant 1st December. The appointment is recognised for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, WESTBOURNE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties. In addition to the duties at the above Hospital, the successful candidate will be required to assist in E.N.T. Outpatient Clinics at Royal Victoria Hospital, Boscombe, Bournemouth and Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas.

Applications to the Deputy Hospital Secretary, Shelley-road, Boscombe, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer) required for 16th November. The post is recognised for the D.A. and F.F.A.R.C.S. and is tenable for 12 months.

Applications to the Deputy Hospital Secretary.

CAERPHILLY DISTRICT MINERS' HOSPITAL. Senior HOUSE OFFICER (surgery) and 2 HOUSE SURGEONS (pre-registration if suitable candidates available) required at above Hospital—6 miles from Cardiff (144 Beds for acute general surgery, orthopædics, E.N.T., ophthalmology, and gynæcology ; 26 Beds for general medicine) ; busy Outpatient, Casualty, and Pathology Departments.

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

CAMBORNE. TEHIDY CHEST HOSPITAL. (190 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON for the new Thoracic Surgical Unit which will finally extend to approximately 40 Beds, in modern surgical block. Salary £350–£450, less £100 p.a. residential emoluments.

Apply to the Hospital Secretary, Tehidy Chest Hospital, Camborne.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Non-resident Locum SURGICAL REGISTRAR for 3 months from 20th November, 1953. Salary £16 per week.

Apply, with full particulars, and copies of 3 recent testimonials, to the Secretary by 4th November.

CAMBRIDGE. PAPWORTH HOSPITAL. East Anglian REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR at above Hospital. Post provides wide range of experience in tuberculosis and includes duties in the Thoracic Surgical Unit. Appointment for 1 year, renewable for second year.

Applications, stating age, qualifications, and details of present and previous appointments, with names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 2nd November, 1953. Candidates invited to visit Hospital by arrangement with Hospital Management Committee Secretary at Papworth Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON. The above post, which is recognised for the F.R.C.S. Diploma, is now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer), resident and tenable for 6 months. It offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for the Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off-duty time is generous and the post is one likely to suit both an Officer seeking a higher qualification in surgery or one intending General Practice. Salary £670 p.a., with £130 deduction for residential emoluments.

Apply Secretary, Chelmsford Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford, Essex.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 22nd November, and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. House SURGEON (pre-registration, first, second, or third post). Duties commencing 21st November, 1953. The Hospital deals with a large number of routine and emergency surgical cases. The post is recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of recent testimonials, should be received not later than 10th November by R. G. MORRISH, Secretary, Hospital Management Committee, Chelmsford Group, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN (pre-registration, or first, second, or third post). Duties commencing 21st November, 1953.

Applications, stating age, nationality, qualifications and experience, together with copies of recent testimonials, should be received not later than 3rd November by R. G. MORRISH, Secretary, Hospital Management Committee, Chelmsford Group, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE SURGEON. Salary at the rate of £350, £400, or £450 p.a., less £100 residential emoluments.

Applications, stating age, qualifications, experience, and enclosing copy testimonials, should be sent to the Secretary Group Management Committee, General Hospital, Cheltenham.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) RESIDENT HOUSE SURGEON required for 6 months appointment. Salary : first post £350, second post £400, third post £450 p.a., less £100 p.a. charge for residence. Post approved for pre-registration practitioners. Post recognised for F.R.C.S. 6 residents including Resident Surgical Officer and 3 House Surgeons. Vacant from 10th November, 1953.

Apply to the Senior Administrative Officer.

CHESTER. BARROWMORE HOSPITAL, Great Barrow. (205 Beds.) Applications are invited from suitably qualified medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (Male). Salary being £700–£50–£1000 p.a., less £130 p.a. for residence. The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Apply, sending 2 references or names of referees, to Secretary.

CHESTER. BARROWMORE HOSPITAL, Great Barrow. (205 Beds.) SENIOR HOUSE OFFICER (medical), Male. Post vacant immediately. Salary £670, less £120 p.a. for residence. The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Apply, sending 2 references, or names of referees, to Secretary.

CHESTERFIELD ROYAL HOSPITAL. Chesterfield HOSPITAL MANAGEMENT COMMITTEE. A HOUSE PHYSICIAN is required immediately at the above Hospital. Appointment is for a pre-registration House Officer or Senior House Officer, according to experience. National salary and conditions.

Please apply M. H. BOONE, Secretary.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of HOUSE SURGEON (first, second, or third post) tenable for 6 months from 15th December, 1953. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane Colchester, Essex.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of HOUSE OFFICER (surgical), first, second, or third post tenable for 6 months from 10th December, 1953. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COTTINGHAM, E. YORKS. Senior House Officer for Raywell Sanatorium (48 Beds) and JUNIOR HOSPITAL MEDICAL OFFICER for Castle Hill Sanatorium (221 Beds) to work under supervision of Consultant Chest Physician. Sanatoria part of Group with major thoracic surgery and Mass Radiography Units and laboratory facilities

Application forms from Group Secretary, Hull B Hospital Management Committee, De la Pole Hospital, Willerby, E. Yorkshire.

COVENTRY HOSPITALS. Resident Senior House OFFICER in Anæsthetics required, vacant now. Salary £670 p.a. Recognised for F.F.A.R.C.S. Excellent experience in all types of general anæsthetics. Duties at Coventry and Warwickshire Hospital and Gulson Hospital.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE PHYSICIAN required. Post offers wide experience in general medicine.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) SENIOR HOUSE OFFICER (fracture and orthopædic) required for Receiving-room duties. Vacant 31st October. Recognised for F.R.C.S.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) HOUSE SURGEON (fracture and orthopædic) required. Recognised for F.R.C.S. Pre-registration candidates may apply.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) House SURGEON (resident) for Fracture and Orthopædic Unit required immediately.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

DARLINGTON MEMORIAL HOSPITAL. Applications are invited from Male or Female practitioners with experience for the post of SURGICAL REGISTRAR (Senior House Officer) which is 1 of a surgical team of 2 Registrars and 1 House Officer responsible for surgical beds and casualty. The post is recognised for the F.R.C.S.(Eng.). Salary £670 p.a., deduction of £150 p.a. for full residential emoluments. The post is tenable for 12 months and is renewable annually.

Apply with references, stating age and experience, to—

G. W. BECKWITH, Group Secretary.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident), which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith. G. W. BECKWITH, Group Secretary.

DARTFORD HOSPITAL MANAGEMENT COMMITTEE.

SENIOR HOUSE OFFICER (orthopædics and traumatic surgery) at the West Hill Hospital, Dartford.

HOUSE SURGEON (orthopædics) at the Southern Hospital, Dartford.

HOUSE OFFICER (E.N.T. and ophthalmology) at the Southern Hospital, Dartford.

Applications, stating age, qualifications, experience, nationality, and the names of 2 persons to whom reference may be made, to be sent for House Officers to the Medical Superintendent of the hospital concerned, and for Senior House Officer to the Group Secretary, Dartford Hospital Management Committee, the Bow Arrow Hospital, Dartford.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

Corbett Hospital, Stourbridge (106 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

SENIOR HOUSE OFFICER (resident), surgical, or HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate less deduction for residential emoluments.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (Resident Anæsthetist). Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate, less deduction of £100 p.a. in respect of residential emoluments.

Prestwood Sanatorium (200 Beds)

SENIOR HOUSE OFFICER (resident). Post now vacant. Salary £670 p.a., less £150 p.a. for residential emoluments.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DEWSBURY. THE GENERAL HOSPITAL. (119 Beds.) Applications are invited for appointments as HOUSE OFFICER (medical) and HOUSE OFFICER (general surgery), recognised pre-registration appointments offering excellent experience. Posts are tenable for 6 months and the salary is in accordance with national scale.

Applications, together with names of 2 referees, should be sent immediately to the Administrative Officer, The General Hospital, Dewsbury.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the Fellowship and D.L.O.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the whole-time post of SENIOR HOUSE OFFICER (E.N.T. Department) in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales). Salary at the rate of £670 p.a., less £130 p.a. for board, residence, &c.

Applications, stating age, education, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Group Secretary.

Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the D.A.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of RESIDENT ANÆSTHETIST in the grade of Senior House Officer. Salary at the rate of £670 p.a., from which a deduction of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the F.R.C.S.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SECOND CASUALTY OFFICER (Senior House Officer) at above Infirmary. Salary £670 p.a., from which a deduction at the rate of £130 p.a. will be made for residential emoluments.

Applications, stating age, qualifications, and details of present and previous appointments with dates, and enclosing copies of 3 recent testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the Fellowship and the D.O.M.S.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of OPHTHALMIC HOUSE SURGEON at Doncaster Royal Infirmary (330 Beds). The appointment will be in the grade of Senior House Officer and is recognised in connection with the Diploma in Ophthalmology. Salary at the rate of £670 p.a., less £130 for board, residence, &c.

Applications, stating age, education and qualifications, and giving details of experience, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT CASUALTY REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. DERBY AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) or SENIOR HOUSE OFFICER, required now.

Applications, with 2 names for reference, should be sent to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) SENIOR HOUSE OFFICER (pædiatrics), vacant now.

Apply, giving 2 names for reference, to the Secretary, Derby No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. KINGSWAY HOSPITAL. (726 Beds.—Recognised for D.P.M.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (psychiatry) required. Single accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following HOUSE OFFICER appointments which are now vacant for the period ending 31st January, 1954.

Cumberland Infirmary, Carlisle (340 Beds)

1—General Surgery.
1—Orthopædics.
1—" Specials "—(E.N.T. and Eyes).
1—Gynæcology and Obstetrics.

Applications, with names of 2 referees, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. 2 RESIDENT HOUSE SURGEONS required for above Hospital. Posts recognised for pre-registration purposes, vacant 6th and 12th December, 1953. Salary £350–£450 p.a., according to experience. Deductions of £100 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience and enclosing up to 3 recent testimonials, to Medical Director of Hospital by 7th November, 1953. Candidates selected for interview will be notified by 14th November, 1953.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for above Hospital. Post vacant 1st December, 1953. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 7th November, 1953. Candidates selected for interview will be notified by 14th November, 1953.

EDGWARE GENERAL HOSPITAL. (715 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR MEDICAL REGISTRAR (whole-time), non-resident, required at above Hospital. Possession of a higher medical qualification essential. Duties will include charge of beds, Outpatient Consultative Clinics and Postgraduate Teaching under supervision of the Physicians. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 31st October, 1953.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum MEDICAL REGISTRAR required non-resident appointment, vacant 10th November, 1953. Probable duration 2–3 months.

Apply to Secretary, Enfield Group Hospital Management Committee at Chase Farm Hospital, stating age qualifications, past and present appointments, and the names of 2 referees, by 28th October, 1953.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery), at the above Hospital, becoming vacant approximately 1st November, 1953. Appointment is for 6 months with possibility of extension for further 6 months. Busy general hospital with easy access to London. Salary on national scale less deduction for board, lodging, &c.

Applications immediately to the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON, required 6th December, 1953. Pre-registration post but registered practitioners may apply. Recognised for F.R.C.S. 6 months appointment.

Applications, stating age, qualifications and experience, with copies of 3 recent testimonials, should be sent immediately to Group Secretary at above address.

FALMOUTH AND DISTRICT HOSPITAL, Falmouth. WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration students or qualified medical practitioners for the office of HOUSE PHYSICIAN, vacant 23rd December, 1953.

Applications, stating age, nationality, qualifications and experience, and accompanied by copies of 2 recent testimonials, should be forwarded to the Hospital Secretary, Royal Cornwall Infirmary, Truro.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. Salary £350, £400, or £450 a year, less £100 a year for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be forwarded to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcological), Male or Female, for duties at the above-named Hospital and Scartho Road Infirmary, Grimsby. The post is now vacant.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. UNITED CAMBRIDGE HOSPITALS. REGISTRAR in Psychiatry at Addenbrooke's Hospital, Cambridge, and at Fulbourn Mental Hospital. This is a trainee post which provides full facilities for clinical work with all types of patients and study for D.P.M. Appointment for 1 year, renewable for second year.

Detailed applications, including age, and names of 3 referees, to Secretary, East Anglian Regional Hospital Board, 117, Chesterton-road, Cambridge, by 2nd November, 1953. Candidates invited to visit hospitals by arrangement with Medical Superintendent of Fulbourn Hospital, Cambridge.

GREENFORD. PERIVALE MATERNITY HOSPITAL. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER, vacant 1st December, 1953. Post recognised for D.Obst.R.C.O.G. Preference will be given to persons seeking second pre-registration post under the Medical Act, 1950.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 31st October, 1953.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Anæsthetics. Duties at above Hospital.

Write not later than 31st October, 1953, giving 3 names for reference, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

HALIFAX AREA HOSPITALS MANAGEMENT COMMITTEE. Applications invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics for duty at Royal Halifax Infirmary (301 Beds) and Halifax General Hospital (425 Beds). Post now vacant.

Applications, to be forwarded to Group Secretary, Royal Halifax Infirmary, Halifax.

HAROLD WOOD HOSPITAL, Harold Wood, Essex. (421 Beds.) SENIOR HOUSE OFFICER (Casualty Department). Applications invited for vacant post which is recognised for F.R.C.S. examination. The Hospital is near London with good travelling facilities to all parts. Salary £670 p.a., less £130 for board-residence.

Applications, stating age, nationality, qualifications and experience, with copies of 2 testimonials, should be sent to the Hospital Secretary.

HAROLD WOOD HOSPITAL, Harold Wood, Essex (near London). (421 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident. Main general and casualty hospital in the Group. Recognised training post for House Officers by Royal College of Surgeons. Salary £670 p.a., less £130 p.a. board and lodging.

Apply, stating age, nationality, qualifications, experience and names of 2 referees, to the Group Secretary, High Wood Hospital, Brentwood, Essex (Tel. Brentwood 2563), from whom full details may be obtained.

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) HOUSE SURGEON for Gynæcology (28 gynæcological beds). Post, vacant 8th December for 6 months, is recognised for M.R.C.O.G. Candidates for Pre-registration Service (surgery) can be considered.

Apply, with 3 recent testimonials, to the Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic), post vacant now. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (491 Beds.) HOUSE PHYSICIAN required for Pædiatrics and General Medicine. Resident. Male or Female. Post vacant 1st December. National scale of salary.

Apply to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (151 Beds—Recognised by the Royal College of Surgeons and for Pre-registration Service.) Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £350, £400, or £450 p.a., plus grant of £50 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HEXHAM GENERAL HOSPITAL. (313 Beds.) Hexham AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female) in General Surgery at Hexham General Hospital; a hospital recognised by the Royal College of Surgeons. Accommodation available for a single or married person, for which a charge will be made.

Applications, with names of 3 referees, should be sent as soon as possible to the Group Secretary, General Hospital, Hexham, Northumberland.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (General—705 Beds.) HOUSE SURGEON (general and genito-urinary) required at above Hospital. Pre-registration House Officers may apply.

Applications, together with copies of not more than 3 recent testimonials, to Medical Director by 2nd November.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (General—705 Beds.) HOUSE SURGEON (general and thoracic) required at above Hospital. Pre-registration House Officers may apply.

Applications, with copies of not more than 3 recent testimonials, to Medical Director by 2nd November.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (General—705 Beds.) HOUSE SURGEON (general and traumatic) required at above Hospital. Pre-registration House Officers may apply.

Applications, together with copies of not more than 3 recent testimonials, to Medical Director by 2nd November.

HEMEL HEMPSTEAD, HERTS. WEST HERTS HOSPITAL. (170 Beds—5 residents.) CASUALTY OFFICER (Junior Hospital Medical Officer). Salary £700–£50–£1000 p.a., less £130 p.a. for residential emoluments. Post vacant mid-October.

Applications, giving full details, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary.

HITCHIN, HERTS. LISTER HOSPITAL. Applications are invited for 2 posts of RESIDENT HOUSE SURGEON. 1 vacant now, the other on 14th November. (Recognised as pre-registration posts.)

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Director, Lister Hospital, Hitchin, Herts.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX (General Acute—81 Beds) invite applications for appointment of RESIDENT HOUSE SURGEON; duties include Casualty Department, 6 months appointment. National Health Service salary and conditions of service.

Applications, stating qualifications, age, &c., with copies of up to 3 recent testimonials or names for reference, to the Hospital Secretary.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (Acute general—81 Beds.) Locum RESIDENT SURGICAL REGISTRAR required for period 30th October–9th November, inclusive. Salary £16 per week, less charge for residence at the rate of £140 p.a.

Apply to Hospital Secretary (Telephone: HOUnslow 4448).

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (General Acute—81 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL REGISTRAR required for 1 year in the first instance. Post vacant 23rd January, 1954. Candidates may visit the Hospital by direct appointment with the Hospital Secretary.

Application forms obtainable from, and returnable to, the Secretary, Staines Group Hospital Management Committee, Ashford Hospital, London-road, Ashford, Middlesex, by 3rd November, 1953.

HOVE GENERAL HOSPITAL, Sackville-road, Hove, 3. HOUSE SURGEON AND CASUALTY OFFICER (recognised for F.R.C.S.). Post vacant immediately. Salary and conditions of service in accordance with national scale (£350–£450, less £100 p.a. for residential emoluments).

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required to commence duty on 1st December, 1953. The post is a pre-registration appointment and the salary is in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

RESIDENT SURGICAL OFFICER (Senior House Officer grade). Recognised for F.R.C.S.

E.N.T. HOUSE SURGEON (Senior House Officer grade). Recognised for F.R.C.S. and D.L.O.

These posts are available immediately, and applications for locum appointments will be considered.

Applications, giving age, qualifications and experience, should be submitted to the Hospital Secretary.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. 6-monthly term. Counts towards D.C.H. qualification. Salary as per Ministry of Health terms of service.

Replies with testimonials to be sent to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of JUNIOR HOUSE OFFICER (medical) at this Hospital which is approved by the licensing authority for Pre-registration Service. The selected candidate will be required to look after medical and pædiatric cases and may be called upon to give emergency anæsthetics.

Apply, with full particulars, and names of 2 referees, to Group Secretary, Hospital Management Committee, Newmarket General Hospital, Newmarket.

IRVINE. AYRSHIRE CENTRAL HOSPITAL. Infectious DISEASES SECTION. (202 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER. Resident appointment. Offers a wide variety of experience in modern methods of diagnosis and treatment of infectious diseases.

Apply immediately to Area Medical Superintendent, 1, Hill-street, Kilmarnock.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. REGISTRAR in Pædiatric Department required. Whole-time. Previous pædiatric experience essential. Duties include work in Children's Unit (90 Beds), Neonatal Unit, and Pædiatric Outpatient Clinics. Vacant 1st January. Candidates may visit Hospital by appointment with Medical Director.

Application forms obtainable from, and returnable to, Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, by 3rd November, 1953.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department. The post is graded Senior House Officer and is now vacant. The Department has 2 Consultants, about 60 Beds, and a large outpatients attendance and offers a wide experience.

Applications, stating age, nationality, experience, and copies of 3 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consultant Surgeon. The post is recognised for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, stating age, nationality, experience, and copies of recent testimonials, to the Hospital Secretary.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (275 Beds.) House Surgeon (pre-registration post). Applications are invited for 2 posts of HOUSE SURGEON to General Surgeon. The posts, which are recognised for the R.C.S. examinations, are normally of 6 months duration and are of House Officer grade.

Applications, stating experience, and with copies of recent testimonials, to Hospital Secretary.

KENDAL. WESTMORLAND COUNTY HOSPITAL. (82 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (surgical). The successful applicant will work with a Consultant Surgical Unit and attend at Consultative Clinics. The post is vacant now and normally tenable for 12 months.

Applications, with names of 2 referees, to be addressed to the Secretary, Royal Lancaster Infirmary, Lancaster.

KNARESBOROUGH. SCOTTON BANKS HOSPITAL, Ripley-road, KNARESBOROUGH, YORKS. HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER. This is a modern hospital of 306 Beds for the treatment of tuberculosis (adult female patients and children). The salary payable is £670 p.a., subject to a deduction in respect of board and lodging.

Applications should be forwarded to—

Dr. V. RYAN, Medical Superintendent.

Scotton Banks Hospital, Knaresborough.

KNARESBOROUGH. SCOTTON BANKS HOSPITAL, Ripley-road, KNARESBOROUGH, YORKS. HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER. This is a modern hospital of 306 Beds for the treatment of tuberculosis (adult female patients and children). The salary and conditions of service will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications should be forwarded to—

Dr. V. RYAN, Medical Superintendent.

Scotton Banks Hospital, Knaresborough.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) LANCASTER AND KENDAL HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD. RESIDENT ANÆSTHETIST (Registrar) required at the above Infirmary. Post (recognised for D.A.) vacant now.

Apply Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). RESIDENT HOUSE SURGEON (general surgery). Post vacant. Recognised for pre-registration.

Apply to the Hospital Secretary.

LYMINGTON HOSPITAL, Lymington, Hants. (107 Beds.) RESIDENT SENIOR HOUSE OFFICER (medical) required immediately.

Applications with copies of testimonials, to be submitted as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of RESIDENT AURAL OFFICER at the General Infirmary Leeds. The post, which is of Senior House Officer status, will be for a period of 1 year in the first instance.

Applications, stating age, sex, nationality, qualifications, and previous posts with dates, together with the names of 3 referees, to be forwarded to the undersigned as soon as possible.

S. CLAYTON FRYERS, Secretary to the Board.

General Infirmary, Leeds, 1.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the following posts in the Department of Neurosurgery at the General Infirmary at Leeds:—

RESIDENT NEUROSURGICAL OFFICER. This post is of Senior House Officer status and will be for 1 year in the first instance.

NEUROSURGICAL HOUSE OFFICER. This is a Junior House Officer post which is approved for Pre-registration Service.

Applications, stating age, qualifications, and previous experience, together with the names of 2 referees, should be forwarded to the undersigned as soon as possible.

S. CLAYTON FRYERS, Secretary to the Board.

General Infirmary, Leeds, 1.

LEEDS. THE UNITED LEEDS HOSPITALS. Applications are invited for the post of HOUSE SURGEON at the Hospital for Women at Leeds. The post, which will become vacant on 1st November, 1953, will be for a period of 6 months and is approved for Pre-registration Service under the Medical Act, 1950.

Applications, stating age qualifications, and the names of 3 referees, should be sent as soon as possible to the Secretary to the Board, General Infirmary, Leeds, 1.

LEEDS. SEACROFT HOSPITAL, York-road, Leeds. Applications invited for post of HOUSE PHYSICIAN for Pædiatric Ward (Professorial Unit) vacant 1st November.

Full details and references to Chief Administrative Officer as soon as possible.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON (gynæcology). The appointment, although recognised as a pre-registration House post, is suitable for a registered medical practitioner and recognised by the Royal College of Obstetricians and Gynæcologists for Membership.

Applications, with copy of 1 testimonial and names of 2 referees, should be forwarded to the Administrative Medical Officer, St. James's Hospital, Leeds, 9, as soon as possible.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts:—

Anæsthetics

Hull A Group with additional duties at hospitals in the Hull B and East Riding Groups (non-resident).

General Medicine

(*a*) St. James's Hospital, Leeds (180 general medical beds) (resident). Duties those of Resident Medical Officer.

(*b*) Bradford A Hospital Management Committee Group (resident). Duties mainly at Bradford Royal Infirmary (110 general medical beds).

General Surgery

Huddersfield Hospital Management Committee Group (residential accommodation available). Duties mainly at Huddersfield Royal Infirmary (100 general surgical beds).

Ophthalmology

Halifax and Bradford A Hospital Management Committee Groups. Duties divided equally between Halifax Group (11 eye beds) and Bradford A (34 eye beds) and associated groups.

Orthopædic Surgery

(*a*) The General Hospital, Batley and other hospitals in the Dewsbury Hospital Management Committee Group (resident).

(*b*) Hull A, Hull B and East Riding Groups (non-resident). Includes some duties in Casualty Department, Hull Royal Infirmary.

Padiatrics

Bradford A and B Hospital Management Committee Groups (resident). Duties mainly at Children's Hospital (100 Beds).

Plastic Surgery

St. James's Hospital, Leeds (resident). Special Plastic and Maxillo-facial Unit (72 Beds).

Psychiatry

(*a*) Storthes Hall Hospital, Kirkburton, near Huddersfield and associated clinics (resident, flat available).

(*b*) Psychiatric Unit, St. James's Hospital, Leeds (resident). Offers special opportunity for experience with neurotic and psychosomatic patients.

(*c*) Clifton Hospital, York (residential accommodation available).

Facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 6th November, 1953.

LEEDS (near). SCALEBOR PARK HOSPITAL, Burley-IN-WHARFEDALE, near LEEDS. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female) at Scalebor Park, a modern hospital of 323 Beds for the active treatment of nervous and mental disorders. The Hospital is associated for teaching purposes with the Department of Psychiatry of Leeds University and facilities will be granted for attending the D.P.M. course. The salary is £670 p.a., less £130 for full residential emoluments.

Applications to the Medical Superintendent immediately.

LENNOXTOWN. LENNOX CASTLE INSTITUTION. Applications are invited for appointment as SENIOR HOUSE OFFICER in Mental Deficiency at above Institution. The appointment will be for 1 year in first instance and subject to National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, and present appointment, together with names of 3 referees, should be submitted not later than 9th November to Secretary, Board of Management, Lennox Castle and Associated Institutions, 113, Douglas-street, Glasgow, C.2.

LINCOLN. LAWN HOSPITAL. 1 Junior Hospital MEDICAL OFFICER and 1 LOCUM TENENS (Junior Hospital Medical Officer) urgently required at Lawn Hospital, Union-road, Lincoln, a private Mental Hospital (100 Beds). Salaries and conditions in accordance with Whitley Council scales. Flatlets available.

Apply, Medical Superintendent.

LINCOLN. COUNTY HOSPITAL. (200 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ST. PAUL'S EYE HOSPITAL. Applications are invited for a temporary post of SENIOR HOUSE OFFICER in Ophthalmology for the period to 30th September, 1954.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a temporary post as REGISTRAR in Psychiatry for the period to 30th September, 1954. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for a post of SENIOR REGISTRAR in Obstetrics and Gynæcology for the period to 30th September, 1954, with duties in the first instance at the Liverpool Maternity Hospital where residence will be provided. Annual reappointment after 30th September, 1954, until completion of the normal period of training will be considered without need for further application.

Apply by 7th November, 1953, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LEICESTER (near). CARLTON HAYES HOSPITAL, NARBOROUGH, near LEICESTER. (1017 Beds. Recognised for training for D.P.M.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (psychiatry) required. A house is available if required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LLANELLY HOSPITAL. (164 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER for duty in the E.N.T., Ophthalmic, and Gynæcological Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

O. C. HOWELLS, Group Secretary.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) (Recognised training hospital for F.R.C.S.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (surgical) now vacant. Salary £670 p.a., less £150 for residential emoluments.

Applications, giving full particulars, with names of 2 referees, should be addressed to the Hospital Secretary.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON now vacant. The post is recognised for the F.R.C.S. examination and Pre-registration Service.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

LUTON CHEST CLINIC, Grove-road, Luton. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (resident preferred) required at the above Clinic. Appointment will include duties in attached medical wards in St. Mary's Hospital, at Hitchin Chest Clinic, and attendance at sessions for minor thoracic surgery. Good training in general medicine as well as experience in treatment of tuberculosis and diseases of the chest essential. Successful candidate would be encouraged to pursue further postgraduate studies. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 7th November, 1953.

MEDWAY AND GRAVESEND HOSPITAL MANAGE-MENT COMMITTEE. ALL SAINTS' HOSPITAL, CHATHAM; ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER; GRAVESEND AND NORTH KENT HOSPITAL; SHEPPEY GENERAL HOSPITAL, MINSTER. Applications are invited for the appointment, vacant early December, of a MEDICAL REGISTRAR (Locum Tenens) with duties in hospitals of above Group. A higher qualification in medicine is desirable. Salary £16 per week. Allowance payable for use of own car. Resident quarters available if required.

Applications, giving particulars of age, qualifications, and experience, together with names of 2 referees, to the Group Secretary, 20, Star-hill, Rochester.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—426 Beds.)

1 SENIOR HOUSE OFFICER (general surgery). Post now vacant.

1 SENIOR HOUSE OFFICER (general medicine), vacant 31st December, 1953.

General surgery post recognised for F.R.C.S. examination.

Forms from Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of Whole-time REGISTRAR in Diagnostic Radiology to the West Manchester Hospital Management Committee. Primarily for duty at Park Hospital, Davyhulme, but with duties at other Group Hospitals. Resident or non-resident, post vacant 31st December, 1953. 12 months appointment subject to renewal.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Locum REGISTRAR in Anæsthetics (resident or non-resident). Recognised for the D.A. regulations.

Apply, giving names of 2 referees, to the Group Secretary, Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of NON-RESIDENT SENIOR REGISTRAR in Thoracic Medicine, to be attached in the first instance to the Bolton Chest Diseases Team. Arrangements may later be made for the successful applicant to be transferred to the Manchester Chest Team to continue his training, where he would also gain experience in the Thoracic Surgery Units at Baguley Hospital (tuberculosis) and Park Hospital (non-tuberculosis). Higher qualification desirable. Further details may be obtained from the Consultant Chest Physician, Bolton Royal Infirmary.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, by 10th November, 1953.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in General Surgery at Leigh Infirmary, Leigh. Applicants must have had surgical experience and preferably hold a higher surgical qualification. The person appointed will be required to perform duties of Resident Surgical Officer at the Hospital (102 acute general beds). Post recognised for the F.R.C.S. examinations.

Applications, together with the names of 2 referees, should be sent to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

MANSFIELD AND DISTRICT GENERAL HOSPITAL. (207 Beds.) MANSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (pre-registration or Senior House Officer post). Post recognised for F.R.C.S. examinations.

Applications, stating age and qualifications, together with copies of 2 recent testimonials, to be forwarded to Group Secretary, Mansfield Hospital Management Committee, Crow Hill-drive, Mansfield.

MANSFIELD. RANSOM SANATORIUM. Nottingham NO. 5 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER. The Sanatorium contains 185 Beds for the treatment of pulmonary tuberculosis in men, women, and children, including a modern Thoracic Surgery Unit. Salary £670 p.a., less £150 for full residential emoluments, which include a comfortable flat.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, to be sent to the Group Secretary, Ransom Sanatorium, Rainworth, near Mansfield.

MARKET DRAYTON (near), SALOP. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer, according to experience). Post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

MAIDSTONE (near). LENHAM SANATORIUM. (172 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at Lenham Sanatorium, near Maidstone. The Sanatorium has 172 Beds for the treatment of pulmonary tuberculosis. Salary £670 a year, with a deduction of £150 a year for residential emoluments. Appointment for 12 months.

Applications to Physician-Superintendent, Lenham Sanatorium, near Maidstone.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. There are 55 E.N.T. Beds and 6 specialist operating sessions each week. Valuable experience is available and the post is recognised for the purposes of the F.R.C.S. and the D.L.O. Salary will be £670 a year less £150 a year for residential emoluments.

Applications immediately to the Administrative Office, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON. Post recognisable for the F.R.C.S.(Eng.). Salary £670 a year, with deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD. Wansbeck HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR CHEST PHYSICIAN (whole-time), resident, Stannington Children's Hospital (203 Beds). Salary £775–£890 p.a. Appointment up to 31st August, 1954, in the first instance. The successful candidate will be afforded opportunities to study for the D.P.H. A small flat is available.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Darlington HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR ORTHOPÆDIC SURGEON (whole-time), resident or non-resident. Appointment up to 31st August, 1954, in the first instance and may be renewed for a further period. Salary £775–£890 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be addressed to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Tees-side HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR PATHOLOGIST required, whole-time for area group laboratory. Appointment, to commence 1st March, 1954, will be up to 31st August, 1954, in the first instance, and may be renewed for a further period. Salary £775–£890 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. North West Durham HOSPITAL MANAGEMENT COMMITTEE. MEDICAL REGISTRAR required at Shotley Bridge General Hospital (557 Beds), whole-time, resident. Salary £775–£890 p.a. Appointment up to 31st August, 1954, in the first instance, and may be renewed for a further period.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Sedgefield HOSPITAL MANAGEMENT COMMITTEE GROUP. REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time), resident. Post linked with Tees-side clinical team. Salary £775–£890 p.a. Appointment up to 31st August, 1954, in the first instance and may be renewed for a further year. A modern self-contained unfurnished flat (5 rooms) will be available.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Newcastle upon Tyne HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (general surgery) whole-time, required for Surgical Team No. 2 at Newcastle General Hospital (861 Beds). Appointment up to 31st August, 1954, in the first instance, and may be renewed for a further period. Salary £775–£890 p.a. Preference will be given to candidate with his Primary Fellowship.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (Orthopædic Department), which is now vacant. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 31st October, 1953.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (general medicine). The above resident post becomes vacant at the beginning of November, 1953, and is tenable for 12 months. The successful candidate will have opportunity for clinical experience in inpatient and outpatient work, including a Diabetic Clinic, under the direction of the Head of the Department. Salary in accordance with the terms and conditions of hospital medical and dental service (England and Wales).

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 7th November, 1953.

NEWARK GENERAL HOSPITAL, Newark. (82 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL OFFICER with general duties required at Registrar rate of pay. This post offers good experience to anyone preparing to enter General Practice. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. Whole-time RESIDENT MEDICAL OFFICER with general duties required at Senior House Officer rate of salary. This post offers excellent experience to anyone preparing to enter general practice. The Hospital has a busy Outpatient Department. Appointment for 1 year in first instance.

Apply to Secretary, General Hospital, Nottingham, giving age, nationality, qualifications and present and previous appointments and names of 3 referees.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Surgery. Salary £670 p.a. Applications are invited from registered medical practitioners.

HOUSE SURGEON. Post approved for Pre-registration Service. National salary scale and conditions. Vacant now.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 referees, to be sent as soon as possible to Group Secretary, Hospital Management Committee Headquarters, Clatterford House, Carisbrooke, I.W.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN. Post approved for Pre-registration Service. National salary scale and conditions. Vacant 1st December, 1953.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 referees, to be sent to the Group Secretary, Hospital Management Committee Headquarters, Clatterford House, Carisbrooke, I.W., as soon as possible.

NEWTON ABBOT HOSPITAL. (General Section—65 Beds.) RESIDENT HOUSE SURGEON (Male or Female) required immediately. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

NUNEATON. MANOR HOSPITAL. (139 Beds.) Senior HOUSE OFFICER required, Fracture and Orthopædic Department (40 Beds). Salary £670 p.a. Recognised for F.R.C.S. Attractive flat available.

Applications to the Hospital Secretary.

NUNEATON. MANOR HOSPITAL. (139 Beds.) House PHYSICIAN (32 general medical beds), vacant now. Pre-registration candidates may apply.

Applications to the Hospital Secretary.

NUNEATON. MANOR HOSPITAL. (139 Beds.) House SURGEON required for general surgical duties including E.N.T. and ophthalmic work. Recognised for F.R.C.S. and pre-registration.

Applications to the Hospital Secretary.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) PÆDIATRIC HOUSE PHYSICIAN required (35 Beds). Pre-registration post. Recognised for D.C.H., includes supervision of babies in Maternity Ward.

Applications to the Hospital Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (134 Beds.) RESIDENT HOUSE SURGEON (post recognised for pre-registration). Applications are invited for the above post which will fall vacant in November and is recognised for the D.C.H. Salary £350–£450 p.a., less emoluments.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (823 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant immediately. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. (144 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT CASUALTY REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of ORTHOPÆDIC AND FRACTURE SENIOR HOUSE OFFICER. The post offers exceptional experience in traumatic and orthopædic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary.

NOTTINGHAM. MAPPERLEY HOSPITAL. (1174 Beds. Recognised for training for D.P.M.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (psychiatry) required. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ORPINGTON HOSPITAL, Orpington, Kent. (639 staffed beds.) RESIDENT HOUSE SURGEON (Male) Pre-registration post in general surgery with charge of dental cases for operation.

Apply, giving full details, to Physician-Superintendent.

OSWESTRY. THE ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. SENIOR SURGICAL HOUSE OFFICER (resident) required 1st January, 1954. Appointment in the first place for 6 months with a possibility of extension.

Applications, with copies of 2 recent testimonial, to be sent to the Secretary.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited from registered medical practitioners for the post of RESIDENT REGISTRAR in General Medicine to the United Oxford Hospitals. A higher medical qualification is desirable. The appointment will be for 1 year and eligible for extension to 2 years.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received by 4th November, 1953.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the whole-time post of NON-RESIDENT REGISTRAR in Pædiatrics with effect from 1st January, 1954. The appointment will be for 1 year and will be eligible for extension for a second year.

Applications on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should reach him by 30th October, 1953.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of REGISTRAR in Pathology (non-resident). The appointment will be for 1 year and eligible for extension to a second year.

Applications, on forms obtainable from Administrator, Radcliffe Infirmary, Oxford, to be received by 9th November, 1953.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration graduates or qualified medical practitioners for the appointment of HOUSE PHYSICIAN (Male), which falls vacant on 2nd December, 1953.

Applications, stating age, qualifications, nationality, and accompanied by copies of 3 recent testimonials, should be forwarded to the Hospital Secretary.

PENZANCE. WEST CORNWALL HOSPITAL. (100 Beds —3 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required. Post vacant now. Good and varied experience in diagnosis, treatment and operative procedure.

Applications, stating age, experience and nationality, to the Hospital Secretary, West Cornwall Hospital, Penzance.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Queen Alexandra Hospital (with 126 surgical beds) SENIOR HOUSE SURGEON.

Applications, stating age, experience and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications are invited from registered medical practitioners for the appointments of :—

(1) SENIOR HOUSE OFFICER in Surgery, Devonport Section, recognised for the Fellowship of the Royal College of Surgeons, vacant 8th December, 1953.

(2) HOUSE SURGEON, Devonport Section, vacant 1st December, 1953.

(3) PÆDIATRIC HOUSE PHYSICIAN, Freedom Fields Section, vacant 1st January, 1954, recognised for the D.C.H.

(4) HOUSE PHYSICIAN, Freedom Fields Section, vacant 1st January, 1954.

(5) HOUSE SURGEON, Freedom Fields Section, vacant 1st January, 1954, recognised for the Fellowship of the Royal College of Surgeons.

(6) SENIOR HOUSE OFFICER to Casualty and Fracture Department, Greenbank Road Section, vacant immediately.

(7) HOUSE PHYSICIANS (2 posts), Greenbank Road Section, both vacant 1st January, 1954.

(8) HOUSE SURGEON, Greenbank Road Section, vacant October, 1953, recognised for the Fellowship of the Royal College of Surgeons.

(9) RESIDENT ANÆSTHETIST, Greenbank Road Section, vacant immediately, recognised for the D.A.

Applications, stating age, nationality, qualifications and experience, with the names of 3 referees, to be sent to the undersigned as soon as possible.

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank Road. Applications invited from registered dental practitioners for the appointment of RESIDENT DENTAL HOUSE SURGEON, vacant 21st November, 1953. This appointment is recognised by the Royal College of Surgeons as fulfilling the requirements of candidates for the Fellowship of Dental Surgery.

Applications, stating age, nationality, and experience, together with copies of 3 recent testimonials, should be sent to—

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical). This is the senior resident post. 2 House Surgeons and a House Physician also resident. Salary £700–£50–£1000, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES.

64, Cardiff-road, Newport, Mon.

POOLE GENERAL HOSPITAL, Longfleet-road, Poole. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT CASUALTY OFFICER (Senior House Officer—£670 p.a.), required 30th November, 1953. Post suitable for persons reading for higher diplomas.

Applications to the Hospital Secretary.

POOLE GENERAL HOSPITAL, Longfleet-road, Poole. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer) required 1st December. Hospital recognised for the D.A. and F.F.A.R.C.S.

Applications to the Hospital Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department). Duties (which include casualty work) at Royal Berkshire Hospital (403 Beds) and Battle Hospital (343 Beds). Person appointed will work with Registrar and House Officer.

Applications, stating age, nationality, present post, qualifications with dates, together with names of 2 referees, to the Group Secretary, 3, Craven-road, Reading.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered medical practitioners for appointment of HOUSE PHYSICIAN (Male), vacant 1st December, 1953, for a period of 6 months. Salary £350–£450 p.a., less £100 residential emoluments. Successful applicant will be required to carry out duties at the following Reading Hospitals : Royal Berkshire (403 Beds), Battle (420 Beds), and Prospect Park (104 Beds). The experience to be gained in this appointment is exceptional, as it covers the whole field of clinical medicine, including children's diseases, fevers, pulmonary tuberculosis and geriatrics.

Apply, stating qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE SURGEON, vacant 8th December, 1953. F.R.C.S. recognised. Salary £350–£450 p.a. according to experience, less £100 for residential emoluments. The appointment is tenable for 6 months.

Apply, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited for the appointment, House Officer grade, of RESIDENT ASSISTANT PATHOLOGIST, vacant immediately for period 6 months. Previous experience in pathology unnecessary.

Applications, with full particulars, and copies of recent testimonials to Secretary.

ROTHERHAM (near). WATHWOOD HOSPITAL. (104 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR in Thoracic Surgery (tuberculosis only) required for a new Unit which is being opened at the above Sanatorium. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous ap ointments with dates, naming 3 referees.

ROTHERHAM. MOORGATE GENERAL HOSPITAL. (358 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROTHERHAM. MOORGATE GENERAL HOSPITAL. (358 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. The Hospital is recognised for the D.A., and deals with most of the operative specialties. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in Pathology in this large General Hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials or names of referees, should be sent immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road. (139 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Male) required. Post recognised for Pre-registration Service.

Apply to the Hospital Secretary.

REDRUTH. CAMBORNE-REDRUTH HOSPITAL. (151 Beds—4 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required for the above Hospital. Post now vacant. This is a general hospital with a great variety of cases. The post gives good experience in diagnosis, operative and postoperative treatment, and in actual operative procedure to the candidate.

Applications, stating age, experience and nationality, together with references, to Hospital Secretary, Camborne-Redruth Hospital, Redruth, Cornwall.

SALISBURY GENERAL HOSPITAL. South West Metropolitan REGIONAL HOSPITAL BOARD. SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR ANÆSTHETIST (resident) at above Hospital which is recognised for the D.A. and F.F.A. Post vacant 3rd January, 1954.

Further details and application forms obtainable from, and should be returned to, the Group Secretary, Odstock Hospital, Salisbury, Wilts, within 14 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Senior House Officer) for a period of 12 months from 16th December.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (tuberculosis). Salary £700–£50–£1000. The person appointed will gain experience of all forms of tuberculosis and chest clinic work. The main duties will consist of day-to-day care of 48 Beds for male patients at Odstock Hospital.

Applications, together with details of experience, and names of 2 referees, to Group Secretary Odstock Hospital, Salisbury, Wilts.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER at the County Hospital, Stornoway (Tuberculosis and Infectious Diseases). A house is available for a married Officer.

Further particulars and forms of application are available from the undersigned, with whom applications should be lodged by 10th November, 1953.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Orthopædics based at Greenock Royal Infirmary. This is a transitional post tenable for 1 year with a possible extension to 2 years, and is offered to candidates who have completed 3 or more years of training as Senior Registrars. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 24th November, 1953.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Dermatology based at Glasgow Royal Infirmary. This is a transitional post tenable for 1 year with a possible extension to 2 years, and is offered to candidates who have completed 3 or more years of training as Senior Registrars. This appointment is subject to the National Health Service (Scotland) superannuation regulation .

Applications (12 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 24th November, 1953.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for 2 appointments as SENIOR REGISTRAR in Surgery, 1 based at the Victoria Infirmary, Glasgow and the other based at Stobhill Hospital, Glasgow. These are transitional posts tenable for 1 year with a possible extension to 2 years, and are offered to candidates who have completed 3 or more years of training as Senior Registrars. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 24th November, 1953.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

REGISTRAR in Medicine based at Glasgow Royal Infirmary.

REGISTRAR in Dentistry based at Glasgow Dental Hospital for duties in the Oral Surgery Department.

REGISTRAR in Surgery, including duties in Orthopædics, at the hospitals under the control of the Board of Management for Stirling and Clackmannan Hospitals.

REGISTRAR in Surgery based at the County Hospital, Stonehouse.

REGISTRAR in Psychiatry based at Bellsdyke Mental Hospital, Larbert.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 10th November, 1953.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for 5 appointments which will be for 1 year in the first instance as SENIOR REGISTRAR or as Senior Registrar (Transitional) in Obstetrics and Gynæcology based at the undernoted Hospitals, and with duties elsewhere in the Region as may be required :—

Redlands Hospital and Glasgow Maternity Hospital.
Robroyston Hospital and the Victoria Infirmary, Glasgow.
Ayrshire Hospitals.
Lennox Castle Maternity Hospital/Royal Samaritan Hospital, Glasgow.
Dunbartonshire Hospitals.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (3 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 24th November, 1953.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in the Regional Thoracic Surgery Unit based on the Eastern General Hospital, Edinburgh. The post is superannuable and the conditions of service are in accordance with the regulations.

Applications, giving particulars of age, qualifications and experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. CHEST MEDICINE AND TUBERCULOSIS, DUNDEE AREA. Applications are invited for the post of SENIOR REGISTRAR at the Chest Clinic, Dundee (including M.M.R. Unit) Ashludie Hospital, Monifieth (156 Beds, and Thoracic Surgical Unit of 66 Beds), and at a 30-Bed Children's Unit at King's Cross (I.D.) Hospital, Dundee (250 Beds). The clinics and hospitals are teaching units in the Division of Medicine of the University of St. Andrews. Higher medical qualification essential. Salary and conditions of service are in accordance with the national agreement.

Forms of application may be had from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 7th November, 1953.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (269 Beds. Recognised training hospital for D.A.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (anæsthetics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following appointments in the E.N.T. Department of the Royal Hospital, Sheffield :—

(*a*) SENIOR REGISTRAR (Transitional post). The post is non-resident. The vacancy is being advertised in accordance with the statement on Senior Registrars made by the Ministry of Health and the Joint Committee for Consultants and Specialists. Applications will be considered from Senior Registrars in their fourth or subsequent years in this specialty and from those who have held such posts for 3 or more years and have vacated them since 6th November, 1950. The appointment is for 1 year only in the first instance.

(*b*) NON-RESIDENT REGISTRAR. Post vacant.

(*c*) RESIDENT SENIOR HOUSE OFFICER or HOUSE OFFICER. Post vacant.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent for posts (*a*) and (*b*) not later than 31st October, 1953, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1. Applications with copy testimonials for post (*c*) to be sent immediately to the Superintendent, Royal Hospital, West-street, Sheffield, 1.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Venereology required for the Department and Associated Clinics of the Area Consultant Venereologist, Sheffield; main clinic at the Royal Hospital, Sheffield, others at the Jessop Hospital for Women, Royal Infirmary and the City General Hospital, Sheffield. Appointment for 1 year in the first instance, reviewable annually.

Applications, giving age, nationality, qualifications, present and previous appointments, with dates, and naming 3 referees, to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10, by 2nd November, 1953.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.) vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O. R.C.S.

Applications, stating age, qualifications, nationality, and experience, together with copies of recent testimonials, should be sent to J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 24th September, 1953.

SHREWSBURY. ROYAL SALOP INFIRMARY. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for the post of SENIOR HOUSE OFFICER or HOUSE OFFICER (pædiatric), to take charge of the Royal Salop Infirmary Children's Unit (70 Beds), under the Consultant Pædiatrician. Vacant immediately, The Unit consists of medical, surgical, and fever beds.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to the Group Secretary, Shrewsbury Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

22nd August, 1953. J. P. MALLETT, Group Secretary.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). The successful applicant will be allowed to attend for 2 days a month at The Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study with the Consultant. The post is recognised under the revised Fellowship regulations in respect of the 6 months training required of candidates for the Final Fellowship examination.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to— J. P. MALLETT, Group Secretary,
Group 15 Hospital Management Committee.

Royal Salop Infirmary, Shrewsbury, 10th July, 1953.

SLOUGH. UPTON HOSPITAL. Applications are invited from general practitioners for HONORARY CLINICAL ASSISTANT appointments in the specialties of general surgery, plastic surgery, general medicine, gynæcology and obstetrics, and ophthalmology. Candidates are required to be members of a Medical Protection Society.

Applications to Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor.

SLOUGH, BUCKS. UPTON HOSPITAL. House Surgeon required for post vacant 1st November. Preference given to persons seeking pre-registration House Officer post. National salary.

Applications, stating age, experience and qualifications, together with copies of recent testimonials, should be sent to the Hospital Secretary.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Salary, &c., as nationally advocated. Preference given to candidates intending to specialise in pædiatrics.

Applications, with copies of testimonials, to be submitted as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from appropriately qualified and experienced persons for the post of SENIOR MEDICAL REGISTRAR. The main duties lie at the Royal South Hants Hospital, Southampton (278 Beds), but the successful candidate will also be required to carry out duties at other hospitals within the Group. Candidates may, if they so desire, visit the Hospital by prior arrangement. The present officer's flat may be available.

Forms of application, obtainable from the undersigned, should be returned to him by not later than 7th November, 1953.

FRANK JENNINGS, Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time REGISTRAR in Anæsthetics at the above Hospital. Candidates may visit the Hospital if they so desire.

Forms of application, obtainable from the undersigned, should be returned not later than 7th November, 1953.

FRANK JENNINGS, Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON vacant on 1st December, 1953. Salary according to previous appointments held, less a deduction at the rate of £100 p.a. for residential emoluments. Approved for pre-registration appointment.

Applications, stating age, qualifications and experience, with copies of recent testimonials, should reach the undersigned at the hospital by 4th November, 1953.

J. C. FIELD, Secretary.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT GENERAL HOUSE PHYSICIAN (House Officer grade), vacant 24th November, 1953. Approved for pre-registration appointment.

Applications, stating age, qualifications, and previous experience, with copies of recent testimonials, should reach the undersigned at the hospital by 4th November, 1953.

J. C. FIELD, Secretary.

SOUTHEND-ON-SEA HOSPITAL. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (clinical pathology) for duties within the units comprising the above Hospital. Post tenable for 1 year and recognised for the Diploma in Pathology. Previous experience in pathology not essential but applicants must have good clinical experience. Salary £670 p.a., less appropriate deduction for board.

Applications, with copies of at least 2 recent testimonials, should be sent to the undersigned as soon as possible.

J. C. FIELD, Secretary.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), Male or Female. Recognised for D.A. Post now vacant. Duties mainly at the General Infirmary, Stafford, which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOCKTON-ON-TEES. THE CHILDREN'S HOSPITAL, Durham-road, STOCKTON-ON-TEES. (74 Beds.) CLEVELAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER or alternatively SENIOR HOUSE OFFICER, according to experience of candidate. The appropriate salary and conditions of service being in accordance with the Ministry of Health regulations.

Applications, with copies of 2 recent testimonials, should be forwarded to the undersigned at West Lane Hospital, Middlesbrough, as early as possible.

12th October, 1953. L. BRITTAIN, Group Secretary.

STOKE-ON-TRENT. BUCKNALL ISOLATION HOS-PITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of SENIOR HOUSE OFFICER (medical), vacant very shortly.

Applications, with copy testimonials, and full details, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT GROUP OF HOSPITALS. Whole-time REGISTRAR in Tuberculosis. Duties mainly at Cheshire Joint Sanatorium (305 Beds). Single accommodation. Experience general medicine essential.

Application forms from Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned before 9th November, 1953.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for HOUSE OFFICER (general surgery), vacant shortly. Hospital recognised for F.R.C.S. examination and the post is recognised for experience during the pre-registration period.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. (Pre-registration post.) Applications are invited for the post of HOUSE OFFICER (gynæcology and obstetrics). Recognised for M.R.C.O.G. (Gynæcology).

Applications, giving full details, together with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (orthopædics) required, vacant now. Post recognised for F.R.C.S.

Applications, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STRATFORD-ON-AVON GENERAL HOSPITAL. (187 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Medical Officer). The post which is vacant on 1st November, 1953, is for duties on the medical wards under the supervision of the Consultant staff. The appointment gives good experience in general medicine and is suitable for an applicant working for a higher qualification. There are 2 other resident staff.

Applications, giving full details of qualifications and experience, together with copies of 2 testimonials, should be sent to the Hospital Secretary as soon as possible.

ST. ALBANS CITY HOSPITAL. (382 Beds.) Mid HERTS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (House Officer grade) required at the above Hospital. Post vacant 25th November, 1953, and tenable for 6 months. Duties mainly in the Pædiatric Department. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be forwarded to the Group Secretary, St. Albans City Hospital, Normandy-road, St. Albans.

ST. HELENS HOSPITAL, Marshalls Cross-road, St. HELENS. (196 Beds.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to— N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot.

ST. HELENS HOSPITAL. (196 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER to act as Casualty Officer. The appointment will be subject to annual review.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to—

N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN. The appointment is recognised for the Diploma in Child Health and includes supervision of Newborn Infants. Post vacant on 17th November, 1953.

Applications, stating age, qualifications with dates, nationality, and details of experience, together with 2 recent testimonials, should be sent immediately to the Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton, Somerset.

TREDEGAR GENERAL HOSPITAL, Mon. Senior HOUSE OFFICER (surgery) required at above Hospital (20 miles from Newport and 24 from Cardiff). Surgery Unit of 50 Beds and 6 orthopædic beds under daily supervision of Consultant Surgeon and visiting supervision of Orthopædic Surgeon. Busy Outpatients (10 specialties) and Casualty Departments.

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

TRURO. ROYAL CORNWALL INFIRMARY. (212 Beds, 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the combined pre-registration post of HOUSE SURGEON (E.N.T. and Ophthalmic Departments) and JUNIOR HOUSE PHYSICIAN, vacant 4th November, 1953.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to the Hospital Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (212 Beds, 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE PHYSICIAN, vacant 8th January, 1954.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to the Hospital Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds, 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration students or qualified medical practitioners for HOUSE SURGEON (Male or Female) for General Surgery and Gynæcology, vacant 14th January, 1954.

Applications, stating age, qualifications and experience, and enclosing copies of 2 recent testimonials, should be sent to the Hospital Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds, 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration students or qualified medical practitioners (Male or Female) for the office of HOUSE SURGEON in an extremely active general hospital doing major surgery and with busy outpatient departments. Post vacant 28th December, 1953.

Applications, enclosing copies of 2 recent testimonials, should be sent to the Hospital Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds, 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR RESIDENT HOUSE OFFICER to the Orthopædic and Traumatic Department. This is a large and busy centralised unit with 2 Consultants, 64 Beds, and Outpatient Departments also 45-Bed Rehabilitation Annexe which deal with the whole of the West Cornwall Area.

Applications, stating age, nationality, qualifications and experience, and accompanied by copies of 2 recent testimonials, should be forwarded to the Hospital Secretary, Royal Cornwall Infirmary, Truro, without delay.

TUNSTALL, BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE OFFICER (medical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

UXBRIDGE GROUP HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (whole-time) for duties at Uxbridge Chest Clinic and Hillingdon Hospital (30 female beds). Candidates should have good general medical experience and special experience in chest diseases. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middlesex, by 2nd November.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Salary will be £350–£450 p.a., less a deduction of £100 for full residential emoluments.

Applications should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited from Males or Females for the post of RESIDENT HOUSE PHYSICIAN at the above Hospital. National Health Service terms and conditions.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the post of RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer grade) at the above General Hospital. The person appointed will be required to deputise for the Resident Surgical Officer. Terms and conditions of service in accordance with national recommendations and the post is subject to the National Health Service superannuation acts and regulations thereunder.

Applications should be made to the Group Secretary.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointments in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

(i) SENIOR HOUSE PHYSICIAN.
(ii) SENIOR HOUSE SURGEON.

Salary for above posts £670 p.a., less a charge of £130 p.a. for board, lodging, &c.

(iii) Locum SENIOR HOUSE OFFICER. Salary £13 per week less a charge of £2 10s. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

G. L. BANNER, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WARWICK HOSPITAL. Applications are invited for the resident post of HOUSE OFFICER in Orthopædics. Work includes attendance at clinics.

Applications, with copies of 2 recent testimonials, to the Administrative Officer, Warwick Hospital, Lakin-road, Warwick.

WARWICKSHIRE. SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). SENIOR HOUSE OFFICER (anæsthetics). Applications are invited for this appointment which is at present vacant. Duties at hospitals in the Group but mainly at the Warneford Hospital, Leamington Spa.

Applications, giving names and addresses of 3 referees, to be sent to the undersigned as soon as possible.

W. A. JAMES, Group Secretary.
87, Radford-road, Leamington Spa.

WATFORD. SHRODELLS HOSPITAL. (General Hospital—420 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Unit. This is a newly formed Unit for the study of geriatric conditions under a full-time Specialist. If resident, there will be a deduction of £140 p.a. for emoluments. Adequate time is available for reading.

Applications, together with not more than 2 copies of recent testimonials, should reach the Medical Officer-in-charge, as soon as possible.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Rhymney and Sirhowy Valleys Hospital Management Committee. The successful candidate will be based at the Caerphilly and District Miners' Hospital, Caerphilly, Glam, and will also be expected to serve other Hospitals within the Committee's Area. The post is resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE PHYSICIAN required (Male or Female). Post vacant mid-November, 1953, and tenable for 6 months. Approved for Pre-registration Service.

Applications, giving details of age, experience, qualifications, and nationality, together with copies of testimonials, to the Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON required (Male or Female). Post vacant mid-November, 1953, and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Male or Female) required at the above Hospital, House Officer grade post, now vacant. Approved pre-registration post.

Applications, stating age and qualifications, together with the names of 2 referees, should be forwarded to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as early as possible.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required immediately. Resident. Post recognised for F.R.C.S. Wide experience available under Area orthopædic team. Appointment for 6 months in the first instance.

Applications, with copies of 2 testimonials, to the Secretary.

WIRRAL. LEASOWE CHILDREN'S HOSPITAL, Moreton, WIRRAL, CHESHIRE. (223 Beds.) NORTH WIRRAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from duly qualified medical practitioners for the post of HOUSE OFFICER at the above Hospital specialising in the treatment of long-term orthopædic, non-pulmonary tuberculous, and general pædiatric conditions. This appointment, vacant 1st January, 1954, gives ample scope to a practitioner reading for a higher qualification. Salary in accordance with National Health Service regulations—i.e., £350, £400 or £450, according to experience.

Applications, giving full details of age, qualifications and experience, together with the names and addresses of 3 referees, to Hospital Secretary, Leasowe Children's Hospital, Leasowe, Moreton, Wirral, Cheshire.

WARE PARK HOSPITAL, Ware, Herts. (129 Beds— Pulmonary tuberculosis.) Temporary MEDICAL REGISTRAR (Pulmonary tuberculosis) required immediately for a period of up to 6 months. Resident.

Applications to Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford (Tel. : Hertford 2275).

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

HOUSE OFFICER (Casualty Department), vacant now.

HOUSE OFFICER (Ear, Throat and Nose Department), vacant 31st October.

Applications with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.

The Royal Hospital, Wolverhampton.

WORCESTER. RONKSWOOD HOSPITAL. Gynæco-LOGICAL AND MATERNITY UNIT (Part I School). Applications are invited for the post of HOUSE SURGEON (obstetrics/gynæcology), vacant early December. The post is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G. The appointment will be for 6 months and is in accordance with the terms and conditions of service for Hospital medical staff.

Applications, with copies of testimonials, should be sent to the Hospital Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for the post of HOUSE PHYSICIAN, vacant middle November. The appointment will be for 6 months and will be in accordance with the terms and conditions for hospital medical staff.

Applications should be sent to the Secretary by 5th November.

WORKSOP. KILTON HOSPITAL. (191 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in the first instance. The Kilton Hospital contains the medical division of the Worksop Group. The successful candidate will be responsible for the supervision of 52 acute medical beds and also of the dermatological and pædiatric beds.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 2nd November, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

YORKSHIRE. EAST RIDING HOSPITAL MANAGE-MENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (218 Beds)

(*a*) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer). Recognised for F.R.C.S. Vacant now.

(*b*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties, some orthopædics.

East Riding General Hospital, Driffield, Yorks (249 Beds)

(*c*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties.

Northfield Sanatorium, Driffield, Yorks (78 Beds)

(*d*) SENIOR HOUSE PHYSICIAN. General Sanatorium treatment. Provision may be made available for thoracic surgery, pathological experience, and M.M.R. Unit. Time for study.

Salary for (*a*) and (*d*) is £670 p.a., less £140 for board and lodging ; and for (*b*) and (*c*) £350–£450 p.a., less £100 for board and lodging. Fully qualified practitioners may also apply for the pre-registration posts.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorkshire.

YORK AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

Grange Hospital, York (Geriatric Hospital of 259 Beds with Consultant staff)

JUNIOR HOSPITAL MEDICAL OFFICER in Geriatrics (resident or non-resident) as soon as possible. Residence available at Doctors' Hostel of modern general hospital in same grounds. Salary £700–£50–£1000, less £153 if resident.

Naburn and Bootham Park Hospital, York

JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry to live in or near Bootham Park Branch, which is 5 minutes walk from centre of York. Salary £700–£50–£1000. Quarters available for single person at a charge of £158. Combined hospital, which has at present 565 Beds, is in process of expansion and has high turnover of cases. Has private and amenity beds. Associated outpatient clinics are held at York County Hospital in addition to outpatients seen at Bootham Park. Facilities for attending D.P.M. course at Leeds University.

County Hospital, York (Acute Hospital of 269 Beds with full consultant staff)

CASUALTY OFFICER (with charge of orthopædic beds), resident or non-resident. Junior Hospital Medical Officer grade, as from 1st November or as soon as possible thereafter. Salary £700–£50–£1000, less £153 if resident. Recognised for F.R.C.S.

SENIOR HOUSE OFFICER in General Surgery (resident). Salary £670, less £153 for residence, as from 1st November or as soon as possible thereafter. Post recognised for F.R.C.S. and includes gynæcology. Wide experience offered.

Pre-registration HOUSE SURGEON (resident). Salary £350–£400, less £100 for residence, as from 1st November or as soon as possible thereafter. Post recognised for F.R.C.S. and includes gynæcology. Wide experience offered.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a. according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is an approved pre-registration House Officer post. Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) for the Casualty Orthopædic Department of the above Hospital. Appointment is recognised for the Diploma of F.R.C.S. (England and Edinburgh). Salary £700–£50–£1000 p.a., Whitley Council conditions of service.

Applications, giving details of age, qualifications, and previous experience, together with copies of 2 recent testimonials, should be sent to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Wrexham.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a whole-time post as REGISTRAR or SENIOR HOUSE OFFICER in Anæsthetics at hospitals managed by the Belfast Hospital Management Committee. In the first instance the appointment will be for the period ending 30th September, 1954, and may be made in any of 3 grades, viz., Principal or Senior Registrar or Senior House Officer, the analogous grades in Great Britain being Senior Registrar, Registrar and Senior House Officer. The terms and conditions of the appointment will be in accordance with the Authority's application of the Spens Report to Northern Ireland.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, and will be received not later than 7th November, 1953.

CANADA. KINGSTON GENERAL HOSPITAL, Kingston, ONTARIO. Canadian Teaching Hospital affiliated with Queen's University Medical School invites applications for JUNIOR (ROTATING) INTERNESHIP for 1 year commencing 25th June, 1954. Honorarium $50 per month, plus residential emoluments.

For application forms and information address Kingston General Hospital, Kingston, Ontario.

CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL. Applications are invited for the post of CASUALTY OFFICER which will be vacant on 21st December, 1953, in the above Hospital. The appointment is for 6 months but is renewable for a further 6 months. Salary £400 p.a., less £100 for residential emoluments.

Applications to be submitted not later than 14th November, 1953, to— The President, Public Health Committee.
General Hospital, Jersey, Channel Islands.

U.S.A. SAINT VINCENT'S HOSPITAL, Bridgeport, CONNECTICUT. A.M.A. approved ROTATING INTERNSHIPS available, leading to Residencies in Specialties, in a 400-Bed general hospital, close to Metropolitan New York. In addition, it has the following features :—

(1) Regional hospital teaching affiliation with New York, University-Bellevue Medical Centre.

(2) State Department Exchange-Student Programme.

For information, write to Administrator, Saint Vincent's Hospital, Bridgeport, Connecticut, U.S.A.

Public Appointments

PORTSMOUTH. CITY OF PORTSMOUTH. Public HEALTH DEPARTMENT. ASSISTANT MEDICAL OFFICER OF HEALTH. Applications are invited from registered medical practitioners for the above appointment ; preference will be given to candidates possessing the D.P.H. The doctor appointed will be responsible to the Medical Officer of Health for the operation of the Department's Immunisation and Vaccination Service and the Disinfestation (Scabies and Pediculosis) Clinic, and will also be required to carry out any other duties as he may direct. The salary scale is £950–£50–£1300, and regard will be had to previous service when fixing the commencing salary. The successful applicant will be required to pass a Medical examination.

Application forms may be obtained from, and should be returned to, the Medical Officer of Health, 1, Western-parade, Portsmouth, not later than Saturday, 31st October, 1953.

V. BLANCHARD, Town Clerk.
City Council Chambers, 1, Clarence-parade, Portsmouth.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Whole-time ASSISTANT MEDICAL OFFICER (Male or Female) for maternity and child welfare. Applicants should have had experience in work with mothers and children, including a 6 months resident post in a maternity hospital and in a children's hospital. The D.P.H. or D.C.H. will be considered an additional qualification. The duties will be mainly in connection with maternity and child welfare as well as the medical aspects of the care of deprived children. Salary £950–£50–£1300 p.a. according to qualifications and experience. Pension scheme (including Widows and Orphans); medical examination.

Form obtainable from the Medical Officer of Health, Council House, Birmingham, 3. Applications, with 3 recent testimonials, to be returned by 7th November, 1953.

BIRMINGHAM. CITY OF BIRMINGHAM EDUCATION COMMITTEE. SCHOOL MEDICAL OFFICERS. Applications invited for (*a*) an Officer for general purposes, and (*b*) Officers for clinical duties. Candidates must have had at least 3 years in the practice of their profession. Salary within the Whitley Council scale of £950–£50–£1300 p.a.

Forms of application (returnable by 7th November) together with further particulars obtainable from the undersigned (send addressed envelope). Communications should be endorsed "School Medical Officer." Canvassing disqualifies.

E. L. RUSSELL, Chief Education Officer.
Queen's College Chambers, 38A, Paradise-street, Birmingham 1.

DERBYSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners (Male or Female), holding the D.P.M., who have had training in child psychiatry, for the whole-time post of CHILD PSYCHIATRIST. Salary £1300 p.a. by annual increments of £50 to £1750 p.a., plus a car allowance.

Full particulars and application forms obtainable from Dr. J. B. S. MORGAN, County Medical Officer, County Offices, St. Mary's Gate, Derby.

HER MAJESTY'S COLONIAL SERVICE. Malaya. Doctors having medical qualifications registrable by the General Medical Council in the United Kingdom, with 1 or more years of experience after qualification, are required as MEDICAL AND HEALTH OFFICERS for general medical and health duties including training of hospital assistants and nurses and to assist if necessary in teaching clinical work to students. Appointments are available :—

(*a*) on probation for permanent and pensionable establishment;
(*b*) on employment from the National Health Service; and
(*c*) on short-term contract with gratuity.

(*a*) *Permanent terms.* Subject to 3 years probation, appointment is permanent with pension (non-contributory) at age of 55. Basic pensionable salary is paid in the scale £890–£50–£1192–£1276–£50–£1680 p.a. In addition, pensionable expatriation pay is payable to all officers at the rate of £266–£364 p.a. A non-pensionable expatriation allowance is paid to married Officers without children at the rate of £91–£133 p.a., and to married Officers with children at the rate of £182–£259 p.a. There are posts, specialist and administrative, available on promotion carrying higher salaries (up to about £3080 for the highest post). Promotion is often made before reaching the top (£1680) of the Medical Officer's salary scale. A temporary variable non-pensionable cost-of-living allowance is payable, according to salary and to family circumstances. This ranges from £56 to £497 a year.

Note. Doctors with more than 1 years approved experience after age 25 (including service in Her Majesty's Forces) enter the salary scale at points above the minimum according to their experience: and 4 increments of salary are also given to holders of approved higher qualifications (e.g., F.R.C.S., M.R.C.P., D.P.M., D.A., &c.).

(*b*) *National Health Service.* Doctors may resign from the National Health Service but retain their superannuation rights during their time in Malaya (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Malayan salary on leaving Malaya at the end of their engagements. Emoluments as under (*a*) including incremental credit for experience and higher qualifications as in Note under (*a*). Doctors so appointed may be considered for permanent terms at any time during their employment in Malaya provided they surrender their rights to the resettlement grant: payment by Malayan Governments of National Health Service superannuation contributions ceases from date of permanent service.

(*c*) *Contract terms.* The contract will be for 3 years resident service renewable for a further tour of 3 years by mutual agreement. Salary and allowances as under (*a*) including incremental credit for experience and higher qualifications as in Note under (*a*). In addition a gratuity of £300–£450 according to salary is paid on expiry of contract. Doctors on contract may be considered for appointment to the permanent establishment at any time on their agreeing to surrender their gratuity earning rights.

In all 3 types of appointment the rates of salary and gratuity refer to doctors eligible for "expatriate terms" under Malayan Regulations (i.e., those whose permanent homes are in the United Kingdom, Irish Republic, Australia, Canada, &c.).

The climate is, for the tropics healthy. European children do well up to the age of about 6 and schools are available locally. Income-tax is payable at Malayan rates which are lower than those in the United Kingdom. Government quarters with heavy furniture are provided at a low rental, or an allowance is paid in lieu of quarters. Free passages are provided for the Doctor, his wife, and children under the age of 10 (not exceeding 4 persons besides himself) on appointment and once each way during each tour of duty of 3–4 years. Generous home leave is granted and local leave is permissible.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting Reference No. CDE. 117/60/06).

HER MAJESTY'S COLONIAL SERVICE. Nigeria. Applications are invited from Doctors with medical qualifications registrable in the United Kingdom and with at least 1 years experience after qualification for the following posts in the Medical Department of the Government of Nigeria :—

(*a*) MEDICAL OFFICERS, for general duties in preventive and curative medicine which may include purely rural health work, involving much travelling.

(*b*) MEDICAL OFFICERS OF HEALTH. Duties as under (*a*). In addition the selected Officers would undertake the control of sanitary matters, and may be required to perform the duties of Port Health Officer at a sea or air port. Candidates should possess a Diploma in Public Health. A Diploma in Tropical Hygiene, though not essential, is desirable.

Appointments may be made as follows :—

(*a*) on 3 years probation for permanent and pensionable employment in the Colonial Medical Service, with retiring age of between 45 and 55. Pensions are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service;

(*b*) from the National Health Service. Candidates may resign from the National Health Service but retain their superannuation rights during their time in Nigeria (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Colonial salary on leaving Nigeria at the end of their engagement; or

(*c*) on short-term contract (2–4 tours of 18 months duration) with inclusive salary of from £1087 p.a. rising to £2000 p.a.; on completion of contract a gratuity is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme. Salaries, including pensionable expatriation pay for Officers appointed under (*a*) or (*b*) range from £950 to £1850 p.a. Starting salary in all cases depends on experience and war service. Quarters are provided at low rents. Free passages in both directions are provided for Officer and his wife. Payment of the cost actually incurred on 1 outward and 1 homeward passage for each of 2 children under age of 18, subject to maximum of £75 in respect of the return journey for each child, is also granted. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 18 months duration.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/14/01).

HER MAJESTY'S COLONIAL SERVICE, Kenya. Medical OFFICERS are required for general duties which include some administrative and public health as well as general hospital work (applications are also invited from holders of the F.R.C.S.). Appointments can be made on a permanent basis with pension (non-contributory) at age of 55, or on short-term contract with gratuity on satisfactory completion of service. Salary is paid in the scale £865–£935–£35–£1005–£45–£1140–£45–£1320–£45–£1590 p.a., starting-point is determined by experience and war service, and 4 extra increments are given to successful candidates possessing the F.R.C.S., D.P.H., or other approved higher qualifications. Temporary cost-of-living allowance of £30, rising to a maximum of £350 p.a., is also payable. Quarters provided at rental of 10% of salary. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 40 to 48 months. Educational facilities are available. Medical Officers are eligible for promotion to administrative super-scale posts in Kenya and other colonial territories and also if they have higher qualifications and suitable experience for specialist appointments. Candidates must possess medical qualification registrable in the United Kingdom and at least 1 years post-graduate hospital experience.

Application forms from Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 11 7/702).

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Bolton, Bury, Manchester, Wigan. Possession of D.P.H. desirable. Salary £950–£50–£1300 p.a. Travelling and subsistence allowances where applicable. Posts superannuable and subject to medical examination.

Application forms and further particulars obtainable from County Medical Officer, East Cliff County Offices, Preston.

NORWICH. CITY OF NORWICH. Appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Applications are invited for the above-mentioned post from registered medical practitioners holding a Diploma in Public Health or an equivalent qualification. Salary scale £1266 13s. 4d.–£50–£1516 13s. 4d. Car allowance granted.

For particulars and application forms apply to the Medical Officer of Health, 68, St. Giles'-street, Norwich, by whom applications should be received not later than 14th November, 1953.

SOUTHERN RHODESIA GOVERNMENT. Vacancies : GOVERNMENT MEDICAL OFFICERS (Male). Additional posts for Government Medical Officers have now been created and vacancies will occur over the next few months. Commencing emoluments vary between £1274 and £1442 p.a., according to experience, with a maximum of £1778 on this grade. Opportunities exist for active clinical work including surgery, for promotion to posts up to £2844 p.a., and for private practice benefits. Preference for recently qualified doctors who must have completed 1 years post-qualification experience on assumption of duty.

Application forms and full details from the Secretary, Rhodesia House, 429, Strand, London, W.C.2. Completed forms to be returned by 10th November.

BOARD OF CONTROL. Senior Registrar at Broadmoor Institution, Crowthorne, Berks (900 Beds), for persons of unsound mind of criminal tendencies. Applicants must be registered medical practitioners. Possession of the D.P.M. an advantage. Appointment on National Health Service conditions of service and superannuation regulations. Furnished quarters or house on estate available at appropriate charges.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments, and names of 3 referees, to Medical Superintendent, Broadmoor Institution, Crowthorne, Berks, by 6th November, 1953. Envelope to be marked A/SR. Canvassing in any form leads to disqualification. Candidates may visit Institution by appointment with Medical Superintendent.

BOARD OF CONTROL. Senior Hospital Medical Officer at Broadmoor Institution, Crowthorne, Berks (900 Beds), for persons of unsound mind of criminal tendencies. Applicants must be registered medical practitioners, with experience in psychiatry. Appointment on National Health Service conditions of service and superannuation regulations. House on estate available at appropriate rental.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments, and names of 3 referees, to Medical Superintendent, Broadmoor Institution, Crowthorne, Berks, by 6th November, 1953. Envelope to be marked A/SHMO. Canvassing in any form leads to disqualification. Candidates may visit Institution by appointment with Medical Superintendent.

IPSWICH. COUNTY BOROUGH OF IPSWICH. Applications are invited from duly registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. The possession of the D.P.H. or the D.C.H. is desirable, though not essential. The salary attaching to the appointment will be £950–£50–£1300 p.a. in accordance with the awards of the Industrial Court. The post is established and superannuable. The Officer appointed will be required to provide, maintain and use a car in the course of the duties for which a car allowance in accordance with the National Joint Council's scale will be payable.

Application forms and conditions of appointment may be obtained from the Medical Officer of Health, Elm-street, Ipswich. J. C. NELSON, Town Clerk.

Town Hall, Ipswich, 21st October, 1953.

STAFFORDSHIRE COUNTY COUNCIL. The County Council invite applications for the whole-time appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY COUNTY SCHOOL MEDICAL OFFICER. Applicants must be duly registered medical practitioners holding a Degree or Diploma in Public Health. Previous practical experience in public health and school health service work is essential, and candidates having had experience in administration will receive preference. The candidate appointed will be required to undertake any duties required by the Council bearing on the health and school services of the County; will act under the administrative control of and be responsible to the County Medical Officer of Health and County School Medical Officer; will be required to provide a car for which allowances will be paid according to the County Council's scale. The scale for this appointment is £1767 p.a., rising by annual increments of £100(3) and £50(1) to £2117 p.a. The appointment will be terminable by 3 calendar months notice in writing on either side and will be subject to the appropriate superannuation provisions and to the passing of a medical examination. Candidates should state in their applications whether or not they are related to any member or senior officer of the County Council, and canvassing in any form will be a disqualification.

Applications marked "Deputy County Medical Officer and Deputy County School Medical Officer," together with copies of not more than 3 recent testimonials should reach the undersigned by not later than 11th November, 1953.

T. H. EVANS, Clerk of the County Council.

County Buildings, Stafford, 14th October, 1953.

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Joint appointment of SENIOR ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER to the Colne Valley, Denby Dale, Holmfirth, Kirkburton, Meltham and Saddleworth Urban District Councils and the West Riding County Council. Applications are invited from registered medical practitioners (Men or Women) for the above post. The Senior Assistant County Medical Officer will be on the staff of the County Medical Officer's Department but will work under the administrative direction of the Divisional Medical Officer and the Medical Officer of Health, who is responsible for the day-to-day administration of practically all public-health matters in the Division, and the post is suitable for medical officers who hold the D.P.H. and wish to obtain further experience in the field of public health. The duties of the office will be mainly clinical in the School Health and Infant Welfare Services, but in addition to these duties the person appointed will be required to act for the Divisional Medical Officer and Medical Officer of Health in his absence. The scale of salary is £1050 p.a., rising by annual increments of £50 to £1400 p.a. The person appointed will under arrangements with the Saddleworth Urban District Council act as Deputy Medical Officer for the area, and will be required to reside in that area or its vicinity. Travelling and subsistence allowances according to the County Council's scale are payable in addition to salary. The post is superannuable and the successful applicant will be required to pass a medical examination as to physical fitness.

Forms of application can be obtained from the undersigned, to whom they should be returned not later than 31st October, 1953. J. WOOD-WILSON, Deputy County Medical Officer.

County Hall, Wakefield.

KINGSTON UPON HULL CORPORATION. Health DEPARTMENT. Applications are invited from registered medical practitioners of either sex for the appointment of ASSISTANT MEDICAL OFFICER. Under the Corporation's scheme for the inter-availability of Medical Officers, the post involves duties in the School Health Service, the Maternity and Child Welfare Section, and other Local Health Authority's Services and, in the event of the appointment of a Male officer, duties under the Hull and Goole Port Health Authority. The salary scale is £950 p.a., rising by annual increments of £50 to £1300 p.a., and regard will be paid to previous service in the grade in fixing the commencing salary. The possession of a qualification in Public Health or the D.C.H. will be an advantage, and preference will be given to candidates who are approved by the Ministry of Education for the purpose of ascertainment of educationally subnormal pupils.

Forms of application and schedules of conditions may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom the completed application forms should be returned not later than 20th November, 1953.

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT. Applications are invited from registered medical practitioners holding in addition a Degree in Sanitary Science, Public Health or State Medicine, for the post of DEPUTY MEDICAL OFFICER OF HEALTH for the City of Stoke-on-Trent at a salary of £1466 13s. 4d. rising by 2 increments of £100 and 1 increment of £50 to a maximum of £1716 13s. 4d. A car allowance will be paid if the Deputy uses his own car on approved duties. The appointment will be subject to the appropriate Superannuation Act, to the successful candidate passing a medical examination, and may be terminated by 3 months notice on either side. The person appointed will be required to devote the whole of his time to the duties of the office and to act under the direction of the Medical Officer of Health. Applicants should have had considerable experience both in the clinical and administrative aspects of a Health Department.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, should be addressed to the Medical Officer of Health, Public Health Department, St. Peter's Chambers, Glebe-street, Stoke-on-Trent, not later than 27th October, 1953. Canvassing, directly or indirectly, will be a disqualification. HARRY TAYLOR, Town Clerk.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

MICKLETON, GLOUCESTERSHIRE. Applications invited for VACANCY (rural) due to retirement on 31st December, 1953. List approximately 1800. Residence not available for purchase. Applications on forms E.C.16A to reach the undersigned not later than 7th November, 1953.

W. J. T. LITTLE, Esq.,
Clerk of the Gloucester County and City Executive Council.
12, College-green, Gloucester.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Medical Journalism.—A Junior Assistant Editor will shortly be appointed to THE LANCET staff. Applications are invited from medical men aged 26–28.—Please write to The Editor, 7, Adam-street, Adelphi, London, W.C.2.

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Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

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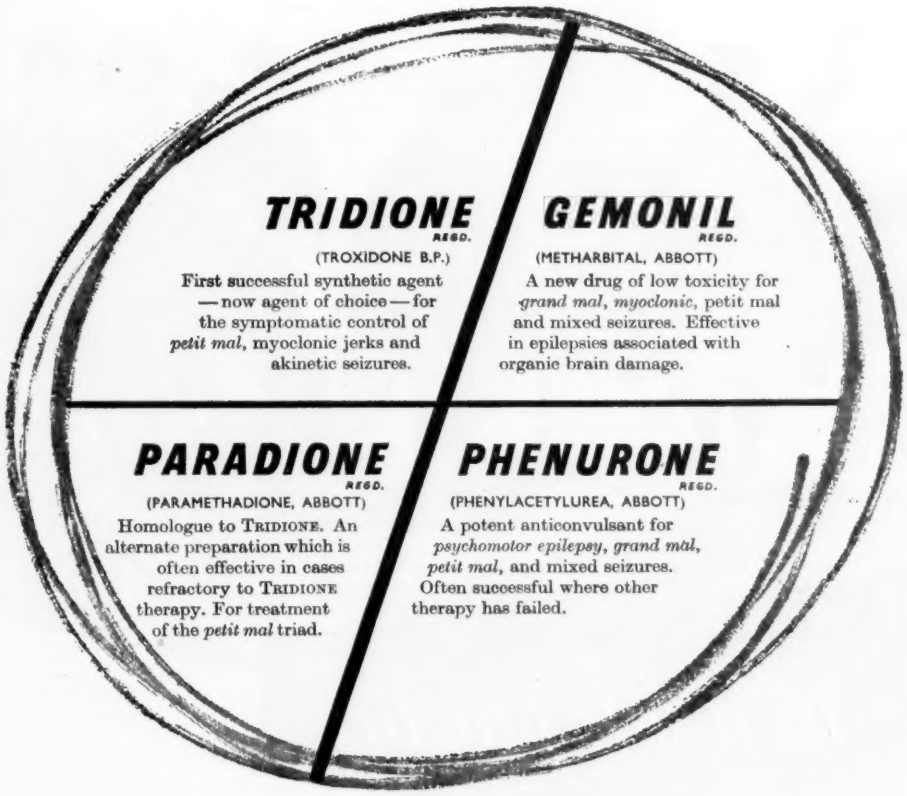
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